



Appendix A

SCIENTIFIC ACTIVITIES OF THE GOVERNMENT
OF ALBERTA
1983-84 SURVEY RESULTS

A REPORT PREPARED BY:

THE SCIENCE AND TECHNOLOGY STATISTICS DIVISION
STATISTICS CANADA

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FOREWORD

This report results from the eleventh annual survey of scientific activities funded by the Government of Alberta. The survey was conducted in May of 1984 by Rose Krakower and Bert Pless of the Science and Technology Statistics Division, Statistics Canada, with the co-operation and assistance of Asefa Gabregiorgis of Advanced Education, and Onno DeVries and Barbara Avery of the Alberta Bureau of Statistics.

Scientific activities data of provincial governments provide an essential base for analysis and the formulation of provincial science policy. As increasing amounts are spent by these governments (Alberta expenditures have grown by more than 300% in the last six years), monitoring and guidance of science programs become more important.

The first surveys of government scientific activities at the provincial level were conducted in the provinces of Ontario, Alberta and Nova Scotia in 1974; Saskatchewan was included in 1975, British Columbia in 1977 and New Brunswick in 1984. Reports for other provinces, similar to this one are available on request from the representatives identified at the end of this report.

Surveys of the scientific activities of provincial governments serve several purposes. They provide data for the development of a national aggregate R&D series. National aggregates are published by Statistics Canada in many of the publications listed at the end of this report. The national aggregates are also needed to complete the international questionnaires for the Organization for Economic Co-operation and Development (OECD) and the United Nations Education, Science and Culture Organization (UNESCO).

The 1983-84 survey has produced reasonable indicators of scientific involvement of the Alberta government at the department or agency level. This success is largely due to the goodwill and efforts of officials of the responding departments. The assistance provided by the Alberta Bureau of Statistics and Alberta Advanced Education is gratefully acknowledged and appreciated by Statistics Canada.

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The following symbols are used in this report:

- nil or zero

(e) estimated by Statistics Canada

.. figures not available

... figures not appropriate or not applicable

-- too small to be expressed

Figure II Total Expenditures on Scientific Activities, by Major Department, 1982-83 and 1983-84

Major Department or Agency	1982-83	1983-84	Percentage change over 1982-83
	(\$'000)		%
Agriculture	16,391	19,532	19
Energy and Natural Resources	25,210	28,509	13
Environment	9,687	13,643	41
Environmental Centre	10,528	11,605	10
AOSTRA	41,105	40,639	--
Hospitals and Medical Care	19,502	22,253	14
Sub-total	122,423	136,181	11
Other	50,738	53,059	5
Total	173,161	189,240	9

Figure III shows that the continued increase in current R&D expenditures in the natural sciences is maintained by 3 departments or agencies. AOSTRA, which in 1983-84 accounts for 35% (\$41 million), anticipates an expenditure of \$74 million in 1984-85.

Figure III Current Expenditures on R&D in the Natural Sciences, 1977-78 to 1984-85(a)

Department or Agency	1977-78	1978-79	1979-80	1980-81	1981-82	1982-83	1983-84	1984-85(a)
	(\$'000)							
AOSTRA	18,126	32,177	40,077	30,960	35,305	41,066	40,586	72,622
Executive Council(1)	...	8,209	9,153	11,561	15,500	19,148	19,950	21,463
Hospitals and Medical Care	1,848	4,517	11,846	12,138	12,942	16,865	19,769	20,992
Other	20,690	12,529	17,077	20,774	26,801	30,283	34,442	37,900
Total R&D	40,664	57,432	78,153	75,433	90,548	107,362	114,747	152,977

(1) Vote 6 to Alberta Research Council.

While the Alberta government carries out most of its own RSA, only approximately 20% of the R&D funded is performed intramurally. Agriculture, Energy and Natural Resources, and the Environmental Centre are the major performers.

Figure IV Total Expenditures on Scientific Activities, by Sector of Performance, 1983-84

Activity	Intramural	Industry	University	Hospitals and health organizations	Alberta Research Council(1)	Other	Total
	(\$'000)						
R&D	27,411	32,207	13,617	16,646	33,370	5,373	128,624
RSA	43,439	10,781	946	65	1,673	3,712	60,616
Total	70,850	42,988	14,563	16,711	35,043	9,085	189,240

(1) Annual funding by the Government of Alberta - Other funds are not included.

Of the \$43 million of provincial funds allocated to the industrial sector, \$32 million (75%) is devoted to R&D. AOSTRA is the major contributor to this sector, accounting for 65% or \$28 million. AOSTRA and Agriculture are the prime funders of the university sector, together accounting for 51% of the \$15 million funded, \$14 million of which is devoted to R&D.

The Department of Hospitals and Medical Care contributed \$17 million to the hospitals and health organizations for medical research. The Alberta Research Council received its funds from six provincial departments in 1983-84. The largest source is the Executive Council for an amount of \$20 million.

Figure V Total Expenditures on Scientific Activities by Sector of Performance and by Major Department, 1983-84

Department or Agency	Intramural (\$'000)	Industry	University	Hospitals and health organizations	Alberta Research Council	Other	Total
Agriculture	8,294	493	3,484	-	4,071	3,190	19,532
Energy and Natural Resources	18,618	3,602	1,281	-	4,899	109	28,509
Environment	8,804	2,535	693	55	600	956	13,643
Environment Centre	11,570	-	-	-	-	35	11,605
Executive Council	-	-	-	-	19,950	-	19,950
Hospitals and Medical Care	1,647	-	2,504	16,544	-	1,558	22,253
AOSTRA	2,921	27,575	3,999	-	5,086	1,058	40,639
Other	18,996	8,783	2,602	112	437	2,179	33,109
Total	70,850	42,988	14,563	16,711	35,043	9,085	189,240

Figure VI Total Expenditures on Scientific Activities, by Source of Funds and by Major Department, 1983-84

Department or Agency	Departmental budget (\$'000)	Transfer from other departments	Trust fund	Other sources	Total
Agriculture	11,678	-	7,854	-	19,532
Energy and Natural Resources	11,777	-	-	16,732	28,509
Environment	13,348	-	295	-	13,643
Environment Centre	11,539	66	-	-	11,605
Executive Council	19,950	-	-	-	19,950
Hospitals and Medical Care	18,010	4	4,239	-	22,253
AOSTRA	2,921	-	37,718	-	40,639
Other	30,709	1,137	397	866	33,109
Total	119,932	1,207	50,503	17,598	189,240
%	63	1	27	9	100

The primary source of funds for scientific activities is the provincial departmental budgets, which fund 63% of total science expenditures. The Alberta Heritage Savings Trust Fund is the source of 93% of AOSTRA's science expenditures. In total, the Fund is the source of 27% of the 1983-84 science expenditure.

Other sources include the federal-provincial cost shared programs of \$17.6 million.

Figure VII Application of Total Expenditures, 1983-84

Application	(\$'000)		Total
	Natural sciences	Social sciences	
Energy and fuels	52,989	-	52,989
Environmental issues	19,052	1,654	20,706
Health	25,250	4,075	29,325
Industrial and economic issues	47,513	3,313	50,826
Social development and related areas	2,336	19,691	22,027
Transportation	2,587	1,281	3,868
All other	9,344	155	9,499
Total	159,071	30,169	189,240

The major applications of scientific expenditures by the Alberta government are shown in Figure VII. Two main application areas, energy and fuels and industrial and economic issues, account for 55% of the total scientific expenditures. The major departments or agencies supporting these applications are AOSIRA, Energy and Natural Resources and Agriculture.

The application with the largest expenditure in the social sciences is social development and related areas. Culture, Education and Solicitor General are the main supporters of this application.

Person-years involved in scientific activities total 1,519. Categories identified are scientific and professional, technical and other. The scientific and professional category is the largest with 49% of the total. Technical and other categories comprise 34% and 17% respectively.

Figure VIII Departmental Personnel Engaged in Intramural Activities, by Science Type and Category, 1983-84

Science type and activity	Scientific and professional (person-years)	Technical	Other	Total
Natural sciences:				
R&D	159	137	52	348
RSA	274	326	65	665
Total	433	463	117	1,013
Social sciences:				
R&D	16	-	5	21
RSA	298	56	131	485
Total	314	56	136	506
Total	747	519	253	1,519

The Environmental Centre employs 23% of the total 1,009 people working in the natural sciences while 29% work in Department of Agriculture.

Natural plus Social Sciences and Humanities

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TABLE 1. Total Expenditures, by Activity, 1977-78 to 1984-85(e)

Activity	1977-78	1978-79	1979-80	1980-81	1981-82	1982-83	1983-84	1984-85(e)
(\$'000)								
Research and development:								
Current expenditures:								
In-house	3,971	2,648	5,652	7,488	11,825	14,751	15,785	16,912
Contracts	20,490	38,018	48,722	39,559	47,156	51,969	46,658	83,241
Grants	18,119	19,734	27,294	30,704	33,561	42,040	54,267	55,136
Research fellowships	152	112	202	112	271	306	503	375
Sub-total	42,732	60,512	81,870	77,863	92,813	109,066	117,213	155,664
Capital expenditures	592	2,384	1,384	1,421	1,932	8,030	11,411	4,354
Related scientific activities:								
Current expenditures	21,565	19,439	26,477	34,786	55,765	54,038	58,717	60,702
Capital expenditures	130	260	610	720	1,751	2,027	1,899	1,856
Total	65,019	82,595	110,341	114,790	152,261	173,161	189,240	222,576

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TABLE 2. Total Expenditures, by Department or Agency, 1977-78 to 1984-85(e)

Department or Agency	1977-78	1978-79	1979-80	1980-81	1981-82	1982-83	1983-84	1984-85(e)
	(\$'000)							
Advanced Education	...	...	...	...	...	...	1,354	1,723
Advanced Education & Manpower	834	2,408	2,075	1,920	2,344	2,612	...	...
Agricultural Research Trust ..	...	461	472	389	395	373	369	394
Agriculture	3,750	3,500	4,656	7,130	14,978	16,391	19,532	19,526
Alcoholism & Drug Abuse								
Commission	232	248	282	375	497	264	320	290
Attorney General	299	238	260	290	290	290	436	407
Business Development & Tourism	10,766	...	...	...	...	...	...	...
Consumer & Corporate Affairs .	90	62	75	89	120	143	172	167
Culture	3,162(e)	2,111	2,419	2,239	3,318(e)	2,833	3,834	3,913
Economic Development	...	2,117	3,125	3,484	5,857	4,093	3,374	3,400
Education	1,450	1,932	2,114	2,414	3,050	3,617(e)	2,724	3,479
Educational Communications								
Corporation ACCESS	-	263	215	165	182(e)	200(e)	398	405
Energy & Natural Resources ..	5,185	9,140	12,819	14,274	20,630	25,210	28,509	26,090
Environment	8,634	5,886	10,911	11,902	12,268	9,687	13,643	14,038
Environmental Centre	...	...	-	3,168	7,441	10,528	11,605	11,780
Environment Council	788	930	788	1,289	1,321	1,243	1,525	1,339
Executive Council	...	8,209	9,153	11,561	15,500	19,148	19,950	21,463
Hospitals & Medical Care	3,205	5,659	12,876	13,930	15,033	19,502	22,253	24,485
Housing & Public Works	975	390	420	324	480	805	1,206	1,619

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TABLE 2. Total Expenditures, by Department or Agency, 1977-78 to 1984-85(e) - Concluded

Department or Agency	1977-78	1978-79	1979-80	1980-81	1981-82	1982-83	1983-84	1984-85(e)
	(\$'000)							
Labour	435	529	646	693	887	1,105	1,847	996
Manpower	...	...	...	...	...	...	1,539	1,534
Mental Health Research Fund ..	...	182	230	478	360	386	754	754
Municipal Affairs(1)	125	399	258	364	1,184	1,408	1,577	1,677
AOSTRA	18,737	32,746	40,195	30,988	35,335	41,105	40,639	72,647
Recreation & Parks	...	--	580	578	910	940	535	385
Recreation, Parks & Wildlife	1,171(e)	...	...	...	...	...	...	...
Social Services & Community Health	725	535	630	733	933	100	270	290
Solicitor General	267	257	35	183	1,754	3,478	4,434	3,000
Tourism & Small Business	...	517	1,046	1,451	1,246	1,597	1,058	1,060
Transportation	2,564	1,888	1,811	1,932	3,050	3,262	2,964	2,518
Treasury	1,625	1,161	1,426	1,868	2,085	1,994	2,097	2,155
Workers' Compensation Board ..	-	165	-	-	-	-	-	-
Workers' Health, Safety & Compensation	...	662	824	579	813	847	1,122	1,042
Total	65,019	82,595	110,341	114,790	152,261	173,161	189,240	222,576

(1) Revisions available only as of 1981-82.

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TABLE 3. Total Expenditures, by Performer, 1977-78 to 1984-85(e)

Performer	1977-78	1978-79	1979-80	1980-81	1981-82	1982-83	1983-84	1984-85(e)
	(\$'000)							
Intramural	18,839	19,287	26,670	29,556	53,478	61,920	70,850	68,314
Industry	26,146	37,779	47,011	40,831	43,029	44,502	42,988	79,910
Universities	2,138	5,408	6,991	8,070	10,139	17,891	14,563	13,474
Hospitals and health organizations	2,653	5,218	12,330	12,321	12,801	11,191	16,711	18,493
Alberta Research Council(1) ..	10,741	12,874	14,009	20,589	27,750	32,354	35,043	35,398
Other	4,502	2,029	3,330	3,423	5,064	5,303	9,085	6,987
Total	65,019	82,595	110,341	114,790	152,261	173,161	189,240	222,576

(1) Annual funding by the Government of Alberta - other funds are not included.

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TABLE 4. Current Expenditures on R&D, by Performer, 1977-78 to 1984-85(e)

Performer	1977-78	1978-79	1979-80	1980-81	1981-82	1982-83	1983-84	1984-85(e)
	(\$'000)							
Intramural	4,227	3,886	6,180	7,625	11,877	14,804	16,000	17,148
Industry	21,228	34,396	42,141	28,754	28,901	32,579	32,207	70,049
Universities	1,931	4,253	6,001	7,037	9,089	16,420	13,617	12,473
Hospitals and health organizations	1,978	4,785	12,075	12,316	12,801	11,191	16,646	18,433
Alberta Research Council(1) ..	10,188	12,175	12,837	19,567	26,684	31,184	33,370	34,097
Other	3,180	1,017	2,636	2,564	3,461	2,888	5,373	3,464
Total	42,732	60,512	81,870	77,863	92,813	109,066	117,213	155,664

(1) Annual funding by the Government of Alberta - other funds are not included.

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TABLE 5. Current Expenditures on R&D, by Department or Agency, 1977-78 to 1984-85(e) - Concluded

Department or Agency	1977-78	1978-79	1979-80	1980-81	1981-82	1982-83	1983-84	1984-85(e)
	(\$'000)							
Mental Health Research Fund ..	...	182	216	478	360	386	754	754
Municipal Affairs(1)	102	322	166	220	105	68	53	12
AOSIRA	18,126	32,177	40,077	30,960	35,305	41,066	40,586	72,622
Recreation & Parks	...	--	-	-	-	-	27	19
Recreation, Parks &								
Wildlife	449(e)	...	...	...	...	...	...	...
Social Services & Community								
Health	308	76	84	93	-	-	-	-
Solicitor General	-	-	35	24	-	-	-	-
Tourism & Small Business	...	-	-	79	-	-	-	-
Transportation	1,181	998	1,131	952	272	13	66	305
Treasury	220	35	48	203	61	-	-	-
Workers' Compensation Board ..	-	36	-	-	-	-	-	-
Workers' Health, Safety &								
Compensation	-	117	174	17	47	68	372	372
Total	42,732	60,512	81,870	77,863	92,813	109,066	117,213	155,664

(1) Revision only available as of 1981-82.

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TABLE 6. Total Expenditures, by Sources of Funds, 1983-84

Department or Agency	Departmental budget	Transfers from other departments	Transfers from federal government	Trust funds	Other sources	Total
	(\$'000)					
Advanced Education	1,354	-	-	-	-	1,354
Agricultural Research Trust ..	-	250	-	-	119	369
Agriculture	11,678	-	-	7,854	-	19,532
Alcoholism & Drug Abuse Commission	320	-	-	-	-	320
Attorney General	436	-	-	-	-	436
Consumer & Corporate Affairs .	158	14	-	-	-	172
Culture	3,725	101	8	-	-	3,834
Economic Development	3,374	-	-	-	-	3,374
Education	2,655	-	69	-	-	2,724
Educational Communications Corporation ACCESS	380	18	-	-	-	398
Energy & Natural Resources ...	11,777	-	-	-	16,732	28,509
Environment	13,348	-	-	295	-	13,643
Environmental Centre	11,539	66	-	-	-	11,605
Environment Council	1,525	-	-	-	-	1,525
Executive Council	19,950	-	-	-	-	19,950
Hospitals & Medical Care	18,010	4	-	4,239	-	22,253
Housing	1,206	-	-	-	-	1,206

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TABLE 6. Total Expenditures, by Sources of Funds, 1983-84 - Concluded

Department or Agency	Departmental budget	Transfers from other departments	Transfers from federal government	Trust funds	Other sources	Total
	(\$'000)					
Labour	1,047	-	-	-	-	1,047
Manpower	1,539	-	-	-	-	1,539
Mental Health Research Fund ..		754	-	-	-	754
Municipal Affairs	1,577	-	-	-	-	1,577
AOSTRA	2,921	-	-	37,718	-	40,639
Recreation & Parks	310	-	-	-	225	535
Social Services & Community Health	270	-	-	-	-	270
Solicitor General	4,434	-	-	-	-	4,434
Tourism & Small Business	1,058	-	-	-	-	1,058
Transportation	2,964	-	-	-	-	2,964
Treasury	2,097	-	-	-	-	2,097
Workers' Health, Safety & Compensation	280	-	-	397	445	1,122
Total	119,932	1,207	77	50,503	17,521	189,240

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TABLE 7. Total Expenditures by Activity and Performer, 1983-84

Activity	Intra-mural	Industry	Universities	Hospitals and health organizations	Alberta Research Council	Other	Total
(\$'000)							
Research and development:							
Current expenditures:	15,785	-	-	-	-	-	15,785
In-house	44	-	4,467	-	9,344	1,230	46,658
Contracts	171	31,573	8,647	-	24,026	4,143	54,267
Grants	-	634	503	16,646	-	-	503
Research fellowships	16,000	32,207	13,617	16,646	33,370	5,373	117,213
Sub-total							
Capital expenditures	11,411	-	-	-	-	-	11,411
Related scientific activities:							
Current expenditures	41,540	10,781	946	65	1,673	3,712	58,717
Capital expenditures	1,899	-	-	-	-	-	1,899
Total	70,850	42,988	14,563	16,711	35,043	9,085	189,240

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TABLE 8. Total Expenditures by Department or Agency and Performer, 1983-84

Department or Agency	Intra-mural	Industry	Universities	Hospitals and health organizations	Alberta Research Council	Other	Total
	(\$'000)						
Advanced Education	401	30	626	1	-	296	1,354
Agricultural Research Trust ..	27	-	342	-	-	-	369
Agriculture	8,294	493	3,484	-	4,071	3,190	19,532
Alcoholism & Drug Abuse							
Commission	212	108	-	-	-	-	320
Attorney General	-	-	436	-	-	-	436
Consumer & Corporate Affairs ..	172	-	-	-	-	-	172
Culture	2,594	1,129	-	-	-	111	3,834
Economic Development	1,600	1,774	-	-	-	-	3,374
Education	1,239	770	-	-	5	710	2,724
Educational Communications							
Corporation ACCESS	274	124	-	-	-	-	398
Energy & Natural Resources	18,618	3,602	1,281	-	4,899	109	28,509
Environment	8,804	2,535	693	55	600	956	13,643
Environmental Centre	11,570	-	-	-	-	35	11,605
Environment Council	1,525	-	-	-	-	-	1,525
Executive Council	-	-	-	-	19,950	-	19,950
Hospitals & Medical Care	1,647	-	2,504	16,544	-	1,558	22,253
Housing	967	235	-	-	-	4	1,206

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TABLE 8. Total Expenditures by Department or Agency and Performance, 1983-84 - Concluded

Department or Agency	Intra-mural	Industry	Universities	Hospitals and health organizations	Alberta Research Council	Other	Total
(\$'000)							
Labour	962	-	-	-	-	85	1,047
Manpower	1,420	115	4	-	-	-	1,539
Mental Health Research Fund	-	-	640	1071	-	13	754
Municipal Affairs	1,351	149	-	-	-	77	1,577
AOSTRA	2,921	27,575	3,999	-	1,058	1,058	40,639
Recreation & Parks	208	135	169	-	-	23	535
Social Services & Community Health	270	-	-	-	-	-	270
Solicitor General	1,259	3,175	-	-	-	-	4,434
Tourism & Small Business	509	532	-	-	-	17	1,058
Transportation	1,172	492	25	-	432	843	2,964
Treasury	2,097	-	-	-	-	-	2,097
Workers' Health, Safety & Compensation	737	15	360	100	-	-	1,122
Total	20,850	42,988	14,563	16,711	35,043	9,865	189,240

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TABLE 9. Current Expenditures on R&D, by Department or Agency and Performance, 1983-84

Department or Agency	Intra-mural	Industry	Universities	Hospitals and health organizations	Alberta Research Council	Other	Total
(\$'000)							
Advanced Education	-	-	18	1	-	-	19
Agricultural Research Trust	27	-	342	-	-	-	369
Agriculture	4,544	493	3,484	-	4,071	3,190	15,782
Alcoholism & Drug Abuse Commission	1	-	-	-	-	-	1
Attorney General	-	-	436	-	-	-	436
Culture	426	323	-	-	-	24	773
Education	206	10	-	-	5	79	300
Energy & Natural Resources	2,132	2,913	1,153	-	3,734	109	10,041
Environment	2,093	608	659	-	524	-	3,884
Environmental Centre	3,425	-	-	-	-	35	3,460
Executive Council	-	-	-	-	19,950	-	19,950
Hospitals & Medical Care	-	-	2,504	16,544	-	832	19,880
Housing	211	155	-	-	-	4	370
Manpower	-	90	-	-	-	-	90
Mental Health Research Fund	-	-	640	101	-	13	754
Municipal Affairs	48	-	-	-	-	5	53
AOSTRA	2,868	27,575	3,999	-	5,086	1,058	40,586
Recreation & Parks	5	-	22	-	-	-	27
Transportation	2	40	-	-	-	24	66
Workers' Health, Safety & Compensation	12	-	360	-	-	-	372
Total	16,000	32,207	13,617	16,646	33,370	5,373	117,213

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TABLE 10. Application of Expenditures, by Department or Agency, 1983-84

Department or Agency	Advancement of science	Communi- cations	Energy and fuels			Environmental issues
			Fossil fuels	Other		
Advanced Education	-	-	-	-	-	-
Agricultural Research Trust	-	-	-	-	-	-
Agriculture	-	-	-	-	-	-
Alcoholism & Drug Abuse	-	-	-	-	-	-
Commission	-	-	-	-	-	-
Attorney General	-	-	-	-	-	-
Consumer & Corporate Affairs	-	-	-	-	-	-
Culture	155	-	-	-	-	-
Economic Development	-	-	-	-	-	-
Education	-	-	-	-	-	-
Educational Communications	-	-	-	-	-	-
Corporation ACCESS	-	-	-	-	-	-
Energy & Natural Resources	-	-	16,467	1,063	162	12,288
Environment	259	-	172	-	-	3,329
Environmental Centre	-	-	142	-	-	1,525
Environment Council	-	-	-	-	-	3,392
Executive Council	-	-	3,580	-	-	-
Hospitals & Medical Care	-	-	-	-	-	-
Housing	-	-	-	-	-	-

(\$'000)

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TABLE 10. Application of Expenditures by Department or Agency, 1983-84 - Continued

Department or Agency	Advancement of science	Communi- cations	Energy and fuels		Environmental issues
			Fossil fuels	Other	
(\$'000)					
Labour	-	-	-	-	-
Manpower	-	-	-	-	-
Mental Health Research Fund ..	-	-	-	-	-
Municipal Affairs	-	-	-	-	-
AOSTRA	9,085	-	28,633	2,921	-
Recreation & Parks	-	-	-	-	-
Social Services & Community Health	-	-	-	-	-
Solicitor General	-	-	-	-	-
Tourism & Small Business	-	-	-	-	30
Transportation	-	-	-	-	-
Treasury	-	-	-	-	-
Workers' Health, Safety & Compensation	-	-	-	-	-
Total	9,499	-	49,005	3,984	20,706

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TABLE 10. Application of Expenditures by Department or Agency, 1983-84 - Continued

Department or Agency	Industrial and economic development						
	Health	Agriculture	Fisheries	Forestry	Manufacturing	Minerals	Other
	(\$'000)						
Advanced Education	19	-	-	-	-	-	-
Agricultural Research Trust ..	-	369	-	-	-	-	-
Agriculture	-	19,532	-	-	-	-	-
Alcoholism & Drug Abuse							
Commission	320	-	-	-	-	-	-
Attorney General	-	-	-	-	-	-	-
Consumer & Corporate Affairs ..	-	-	-	-	-	-	-
Culture	-	-	-	-	-	-	64
Economic Development	-	58	-	79	1,659	-	457
Education	-	-	-	-	-	-	-
Educational Communications							
Corporation ACCESS	-	-	-	-	-	-	-
Energy & Natural Resources ...	-	110	1,346	5,215	-	805	3,341
Environment	704	107	-	-	-	-	133
Environmental Centre	4,153	2,954	142	142	-	-	-
Environment Council	-	-	-	-	-	-	-
Executive Council	-	-	-	-	-	-	-
Hospitals & Medical Care	22,253	-	-	-	-	-	12,967
Housing	-	-	-	-	-	-	-

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TABLE 10. Application of Expenditures by Department or Agency, 1983-84 - Continued

Department or Agency	Health	Industrial and economic development						Other
		Agriculture	Fisheries	Forestry	Manufac- turing	Minerals		
(\$'000)								
Labour	-	-	-	-	-	-	483	-
Manpower	-	-	-	-	-	-	-	-
Mental Health Research Fund ..	754	-	-	-	-	-	-	-
Municipal Affairs	-	-	-	-	-	-	-	-
AOSIRA.....	-	-	-	-	-	-	-	-
Recreation & Parks	-	-	-	-	-	-	-	-
Social Services & Community	-	-	-	-	-	-	-	-
Health	-	-	-	-	-	-	-	-
Solicitor General	-	-	-	-	-	-	-	811
Tourism & Small Business	-	27	-	25	-	-	-	-
Transportation	-	-	-	-	-	-	-	-
Treasury	-	-	-	-	-	-	-	-
Workers' Health, Safety & Compensation	1,122	-	-	-	-	-	-	-
Total	29,325	23,157	1,488	5,461	1,659	805	18,256	

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TABLE 10. Application of Expenditures by Department or Agency, 1983-84 - Continued

Department or Agency	Social development and related areas					Transportation	Total
	Culture, sport and recreation	Education	Human resources	Urban and regional studies	Other		
(\$'000)							
Advanced Education	-	1,290	-	45	-	-	1,354
Agricultural Research Trust ..	-	-	-	-	-	-	369
Agriculture	-	-	-	-	-	-	19,532
Alcoholism & Drug Abuse							
Commission	-	-	-	-	-	-	320
Attorney General	-	-	-	-	436	-	436
Consumer & Corporate Affairs .	-	-	-	-	172	-	172
Culture	798	24	-	50	2,743	-	3,834
Economic Development	-	-	-	-	-	1,121	3,374
Education	-	2,724	-	-	-	-	2,724
Educational Communications							
Corporation ACCESS	-	398	-	-	-	-	398
Energy & Natural Resources ...	-	-	-	-	-	-	28,509
Environment	-	-	-	-	-	-	13,643
Environmental Centre	743	-	-	-	-	-	11,605
Environment Council	-	-	-	-	-	-	1,525
Executive Council	-	-	-	-	-	-	19,950
Hospitals & Medical Care	-	-	-	-	-	-	22,253
Housing	-	-	-	1,206	-	-	1,206

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TABLE 10. Application of Expenditures by Department or Agency, 1983-84 - Concluded

Department or Agency	Social development and related areas					Transportation	Total
	Culture, sport and recreation	Education	Human resources	Urban and regional studies	Other		
(\$'000)							
Labour	-	-	479	-	85	-	1,047
Manpower	-	-	1,539	-	-	-	1,539
Mental Health Research Fund ..	-	-	-	-	-	-	754
Municipal Affairs	-	-	-	1,577	-	-	1,577
AOSTRA	-	-	-	-	-	-	40,639
Recreation & Parks	533	-	-	-	2	-	535
Social Services & Community Health	-	-	-	-	270	-	270
Solicitor General	-	-	-	-	4,434	-	4,434
Tourism & Small Business	-	60	30	75	-	-	1,058
Transportation	-	-	-	217	-	2,747	2,964
Treasury	-	-	-	-	2,097	-	2,097
Workers' Health, Safety & Compensation	-	-	-	-	-	-	1,122
Total	2,074	4,496	2,048	3,170	10,239	3,868	189,240

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TABLE 11. Application of Expenditures by Activity, 1983-84

Application	Intramural		Extramural		Total
	Research and development	Related scientific activities	Research and development	Related scientific activities	
	(\$'000)				
Advancement of science	150	-	9,284	65	9,499
Energy and fuels:					
Fossil fuels	10,565	172	37,763	505	49,005
Other	2,995	-	741	248	3,984
Environmental issues	3,539	9,437	5,091	2,639	20,706
Health	1,061	6,126	21,037	1,101	29,325
Industrial and economic development:					
Agriculture	5,583	5,787	11,639	148	23,157
Fisheries	380	1,069	21	18	1,488
Forestry	1,132	2,628	1,361	340	5,461
Manufacturing	-	900	-	759	1,659
Minerals	-	-	-	805	805
Other	624	3,645	13,214	773	18,256
Social development and related areas:					
Culture, sport and recreation ..	551	1,198	22	303	2,074
Education	208	1,731	118	2,439	4,496
Human resources	-	1,899	90	59	2,048
Urban and regional studies	259	2,059	214	638	3,170
Other	362	5,168	554	4,155	10,239
Transportation	2	1,620	64	2,182	3,868
Total	27,411	43,439	101,213	17,177	189,240

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TABLE 12. Extramural R&D Expenditures, by Sector of Performance and Application, 1983-84

Application	Industry	Universities	Hospitals and health organizations	Alberta Research Council	Other	Total
	(\$'000)					
Advancement of science	6,797	963	-	1,269	255	9,284
Energy and fuels:						
Fossil fuels	22,992	3,672	-	10,296	803	37,763
Other	275	86	-	380	-	741
Environmental issues	608	611	-	3,872	-	5,091
Health	-	3,546	16,646	-	845	21,037
Industrial and economic development:						
Agriculture	493	3,850	-	4,071	3,225	11,639
Fisheries	-	21	-	-	-	21
Forestry	332	410	-	510	109	1,361
Manufacturing	-	-	-	-	-	-
Minerals	-	-	-	-	-	-
Other	247	-	-	12,967	-	13,214
Social development and related areas:						
Culture, sport and recreation ..	-	22	-	-	-	22
Education	10	-	-	5	103	118
Human resources	90	-	-	-	-	90
Urban and regional studies	205	-	-	-	9	214
Other	118	436	-	-	-	554
Transportation	40	-	-	-	24	64
Total	32,207	13,617	16,646	33,370	5,373	101,213

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TABLE 14. Total Expenditures by Activity and Performer, 1984-85(e)

Activity	Intra-mural	Industry	Universities	Hospitals and health organizations	Alberta Research Council	Other	Total
	(\$'000)						
Research and development:							
Current expenditures:	16,912	-	-	-	-	-	16,912
In-house	59	68,760	4,287	-	8,591	1,544	83,241
Contracts	177	1,289	7,811	18,433	25,506	1,920	55,136
Grants	-	-	375	-	-	-	375
Research fellowships	17,148	70,049	12,473	18,433	34,097	3,464	155,664
Sub-total							
Capital expenditures	4,354	-	-	-	-	-	4,354
Related scientific activities:							
Current expenditures	44,956	9,861	1,001	60	1,301	3,523	60,702
Capital expenditures	1,856	-	-	-	-	-	1,856
Total	68,314	79,910	13,474	18,493	35,398	6,987	222,576

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TABLE 15. Total Expenditures, by Department or Agency and Performer, 1984-85(e)

Department or Agency	Intra-mural	Industry	Universities	Hospitals and health organizations	Alberta Research Council	Other	Total
	(\$'000)						
Advanced Education	462	30	860	5	-	366	1,723
Agricultural Research Trust ..	30	-	364	-	-	-	394
Agriculture	10,712	859	2,316	-	3,836	1,803	19,526
Alcoholism & Drug Abuse Commission	212	78	-	-	-	-	290
Attorney General	-	-	407	-	-	-	407
Consumer & Corporate Affairs ..	167	-	-	-	-	-	167
Culture	2,673	1,129	-	-	-	111	3,913
Economic Development	1,600	1,800	-	-	-	-	3,400
Education	1,572	926	60	-	5	916	3,479
Educational Communications Corporation ACCESS	255	150	-	-	-	-	405
Energy & Natural Resources ...	11,078	10,203	712	-	3,988	109	26,090
Environment	8,702	2,953	604	50	447	1,282	14,038
Environmental Centre	11,745	-	-	-	-	35	11,780
Environment Council	1,339	-	-	-	-	-	1,339
Executive Council	-	-	-	-	21,463	-	21,463
Hospitals & Medical Care	3,242	-	2,776	18,327	-	140	24,485
Housing	1,003	616	-	-	-	-	1,619

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TABLE 15. Total Expenditures, by Department or Agency and Performer, 1984-85(e) - Concluded

Department or Agency	Intra-mural	Industry	Universities	Hospitals and health organizations	Alberta Research Council	Other	Total
	(\$'000)						
Labour	996	-	-	-	-	-	996
Manpower	1,377	157	-	-	-	-	1,534
Mental Health Research Fund ..	-	-	640	101	-	13	754
Municipal Affairs	1,513	107	-	-	-	57	1,677
AOSTRA	3,466	58,380	4,250	-	5,245	1,306	72,647
Recreation & Parks	170	60	125	-	-	30	385
Social Services and Community Health	290	-	-	-	-	-	290
Solicitor General	1,200	1,800	-	-	-	-	3,000
Tourism & Small Business	540	500	-	-	-	20	1,060
Transportation	1,158	147	-	-	414	799	2,518
Treasury	2,155	-	-	-	-	-	2,155
Workers' Health, Safety & Compensation	657	15	360	10	-	-	1,042
Total	68,314	79,910	13,474	18,493	35,398	6,987	222,576

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TABLE 16. Current Expenditures on R&D by Department or Agency and Performer, 1984-85(e)

Department or Agency	Intra-mural	Industry	Universities	Hospitals and health organizations	Alberta Research Council	Other	Total
	(\$'000)						
Advanced Education	-	-	60	5	-	-	65
Agricultural Research Trust ..	30	-	364	-	-	-	394
Agriculture	5,127	859	2,316	-	3,836	1,803	13,941
Alcoholism & Drug Abuse	1	-	-	-	-	-	1
Commission	-	-	407	-	-	-	407
Attorney General	426	323	-	-	-	24	773
Culture	254	4	10	-	5	110	383
Education	2,011	9,357	687	-	2,910	109	15,074
Energy & Natural Resources ...	2,050	561	586	-	447	-	3,644
Environment	3,492	-	-	-	-	35	3,527
Environmental Centre	-	-	-	-	21,463	-	21,463
Executive Council	-	-	2,776	18,327	-	-	21,103
Hospitals & Medical Care	245	460	-	-	-	-	705
Housing	-	100	-	-	-	-	100
Manpower	-	-	640	101	-	13	754
Mental Health Research Fund ..	12	-	-	-	-	-	12
Municipal Affairs	3,441	58,380	4,250	-	5,245	1,306	72,622
AOSTRA	2	-	17	-	-	-	19
Recreation and Parks	45	5	-	-	191	64	305
Transportation	-	-	-	-	-	-	-
Workers' Health, Safety & Compensation	12	-	360	-	-	-	372
Total	17,148	70,049	12,473	18,433	34,097	3,464	155,664

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TABLE 17. Application of Expenditures by Department or Agency, 1984-85(a)

Department or Agency	Advancement of science	Energy and fuels			Environmental issues
		Communi- cations	Fossil fuels	Other	
(\$'000)					
Advanced Education	-	-	-	-	-
Agricultural Research Trust ..	-	-	-	-	-
Agriculture	-	-	-	-	-
Alcoholism & Drug Abuse	-	-	-	-	-
Commission	-	-	-	-	-
Attorney General	-	-	-	-	-
Consumer & Corporate Affairs .	-	-	-	-	-
Culture	155	-	-	-	-
Economic Development	-	-	-	-	-
Education	-	-	-	-	-
Educational Communications	-	-	-	-	-
Corporation ACCESS	-	-	14,075	1,792	60
Energy & Natural Resources ...	-	-	170	-	12,578
Environment	215	-	144	-	3,379
Environmental Centre	-	-	-	-	1,339
Environment Council	-	-	3,863	-	3,649
Executive Council	-	-	-	-	-
Hospitals & Medical Care	-	-	-	-	-
Housing	-	-	-	-	-

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TABLE 17. Application of Expenditures by Department or Agency, 1984-85(e) - Continued

Department or Agency	Advancement of science	Communi- cations	Energy and fuels		Environmental issues
			Fossil fuels	Other	
(\$'000)					
Labour	-	-	-	-	-
Manpower	-	-	-	-	-
Mental Health Research Fund ..	-	-	-	-	-
Municipal Affairs	-	-	-	-	-
AOSTRA	9,495	-	59,686	3,466	-
Recreation & Parks	-	-	-	-	-
Social Services & Community Health	-	-	-	-	-
Solicitor General	-	-	-	-	-
Tourism & Small Business	-	-	-	-	20
Transportation	-	-	-	-	-
Treasury	-	-	-	-	-
Workers' Health, Safety & Compensation	-	-	-	-	-
Total	9,865	-	77,938	5,258	21,025

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TABLE 17. Application of Expenditures by Department or Agency, 1984-85(e) - Continued

Department or Agency	Health	Industrial and economic development					
		Agriculture	Fisheries	Forestry	Manufacturing	Minerals	Other
(\$'000)							
Advanced Education	65	-	-	-	-	-	-
Agricultural Research Trust ..	-	394	-	-	-	-	-
Agriculture	-	19,526	-	-	-	-	-
Alcoholism & Drug Abuse							
Commission	290	-	-	-	-	-	-
Attorney General	-	-	-	-	-	-	-
Consumer & Corporate Affairs .	-	-	-	-	-	-	64
Culture	-	-	-	-	-	-	460
Economic Development	-	60	-	80	1,660	-	-
Education	-	-	-	-	-	-	-
Educational Communications							
Corporation ACCESS	-	117	1,208	5,285	-	830	2,723
Energy & Natural Resources ..	-	62	-	-	-	-	235
Environment	778	2,999	144	144	-	-	-
Environmental Centre	4,216	-	-	-	-	-	-
Environment Council	-	-	-	-	-	-	13,951
Executive Council	-	-	-	-	-	-	-
Hospitals & Medical Care	24,485	-	-	-	-	-	-
Housing	-	-	-	-	-	-	-

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TABLE 17. Application of Expenditures by Department or Agency, 1984-85(e) - Continued

Department or Agency	Health	Industrial and economic development					Other
		Agriculture	Fisheries	Forestry	Manufac- turing	Minerals	
(\$'000)							
Labour	-	-	-	-	-	-	492
Manpower	-	-	-	-	-	-	-
Mental Health Research Fund ..	754	-	-	-	-	-	-
Municipal Affairs	-	-	-	-	-	-	-
AOSTRA.....	-	-	-	-	-	-	-
Recreation & Parks	-	-	-	-	-	-	-
Social Services & Community	-	-	-	-	-	-	-
Health	-	-	-	-	-	-	-
Solicitor General	-	-	-	-	-	-	-
Tourism & Small Business	10	-	30	-	-	-	860
Transportation	-	-	-	-	-	-	-
Treasury	-	-	-	-	-	-	-
Workers' Health, Safety & Compensation	1,042	-	-	-	-	-	-
Total	31,640	23,158	1,382	5,509	1,660	830	18,785

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TABLE 17. Application of Expenditures by Department or Agency, 1984-85(e) - Continued

Department or Agency	Social development and related areas					Transportation	Total
	Culture, sport and recreation	Education	Human resources	Urban and regional studies	Other		
	(\$'000)						
Advanced Education	-	1,593	-	65	-	-	1,723
Agricultural Research Trust ..	-	-	-	-	-	-	394
Agriculture	-	-	-	-	-	-	19,526
Alcoholism & Drug Abuse	-	-	-	-	-	-	290
Commission	-	-	-	-	407	-	407
Attorney General	-	-	-	-	167	-	167
Consumer & Corporate Affairs ..	-	-	-	-	-	-	3,913
Culture	877	24	-	50	2,743	-	3,400
Economic Development	-	-	-	-	-	1,140	3,479
Education	-	3,479	-	-	-	-	405
Educational Communications	-	-	-	-	-	-	26,090
Corporation ACCESS	-	405	-	-	-	-	14,038
Energy & Natural Resources ..	-	-	-	-	-	-	11,780
Environment	-	-	-	-	-	-	1,339
Environmental Centre	754	-	-	-	-	-	21,463
Environment Council	-	-	-	-	-	-	24,485
Executive Council	-	-	-	-	-	-	1,619
Hospitals & Medical Care	-	-	-	-	-	-	-
Housing	-	-	-	-	-	-	-

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TABLE 17. Application of Expenditures by Department or Agency, 1984-85(e) - Concluded

Department or Agency	Social development and related areas					Transportation	Total
	Culture, sport and recreation	Education	Human resources	Urban and regional studies	Other		
(\$'000)							
Labour	-	-	504	-	-	-	996
Manpower	-	-	1,534	-	-	-	1,534
Mental Health Research Fund ..	-	-	-	-	-	-	754
Municipal Affairs	-	-	-	1,677	-	-	1,677
AOSTRA.....	-	-	-	-	-	-	72,647
Recreation & Parks	385	-	-	-	-	-	385
Social Services and Community Health	-	-	-	-	290	-	290
Solicitor General	-	-	-	-	3,000	-	3,000
Tourism & Small Business	-	50	-	90	-	-	1,060
Transportation	-	-	-	143	-	2,375	2,518
Treasury	-	-	-	-	2,155	-	2,155
Workers' Health, Safety & Compensation	-	-	-	-	-	-	1,042
Total	2,016	5,551	2,038	3,644	8,762	3,515	222,576

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TABLE 18. Application of Expenditures by Activity, 1984-85(e)

Application	Intramural		Extramural		Total
	Research and development	Related scientific activities	Research and development	Related scientific activities	
	(\$'000)				
Advancement of science	150	-	9,665	50	9,865
Energy and fuels:					
Fossil fuels	3,643	170	73,770	355	77,938
Other	3,689	-	1,321	248	5,258
Environmental issues	3,400	9,271	5,186	3,168	21,025
Health	1,012	7,756	22,306	566	31,640
Industrial and economic development:					
Agriculture	6,184	7,594	9,231	149	23,158
Fisheries	331	911	-	140	1,382
Forestry	1,134	2,693	1,361	321	5,509
Manufacturing	-	900	-	760	1,660
Minerals	-	-	-	830	830
Other	485	3,322	14,111	867	18,785
Social development and related areas:					
Culture, sport and recreation .	556	1,245	17	198	2,016
Education	254	2,055	153	3,089	5,551
Human resources	-	1,881	100	57	2,038
Urban and regional studies	257	2,269	510	608	3,644
Other	362	5,182	525	2,693	8,762
Transportation	45	1,563	260	1,647	3,515
Total	21,502	46,812	138,516	15,746	222,576

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TABLE 19. Extramural R&D Expenditures, by Sector of Performance and Application, 1984-85(e)

Application	Industry	Universities	Hospitals and health organizations	Alberta Research Council	Other	Total
	(\$'000)					
Advancement of science	8,168	583	-	735	179	9,665
Energy and fuels:						
Fossil fuels	59,242	3,934	-	9,467	1,127	73,770
Other	-	-	-	1,321	-	1,321
Environmental issues	561	544	-	4,081	-	5,186
Health	-	3,860	18,433	-	13	22,306
Industrial and economic development:						
Agriculture	859	2,698	-	3,836	1,838	9,231
Fisheries	-	-	-	-	-	-
Forestry	332	410	-	510	109	1,361
Other	150	10	-	13,951	-	14,111
Social development and related areas:						
Culture, sport and recreation ..	-	17	-	-	-	17
Education	4	10	-	5	134	153
Human resources	100	-	-	-	-	100
Urban and regional studies	510	-	-	-	-	510
Other	118	407	-	-	-	525
Transportation	5	-	-	191	64	260
Total	70,049	12,473	18,433	34,097	3,464	138,516

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TABLE 20. Departmental Personnel Engaged in Intramural Activities, 1984-85(e)

Department or Agency	Research and development			Related scientific activities				
	Scientific and professional	Technical	Other	Total	Scientific and professional	Technical	Other	Total
(person-years)								
Advanced Education	...	...	...	...	16	-	2	18
Agricultural Research Trust ...	...	...	...	...	...	...	...	...
Agriculture	55	75	-	130	70	95	...	165
Alcoholism & Drug Abuse Commission	...	...	...	...	3	2	1	6
Attorney General	...	...	...	...	...	...	...	...
Consumer & Corporate Affairs ..	...	...	...	...	4	-	1	5
Culture	11	-	2	13	41	12	20	73
Economic Development	...	...	...	...	65	-	10	75
Education	5	-	2	7	11	2	10	23
Educational Communications Corporation ACCESS	...	...	...	...	5	1	-	6
Energy & Natural Resources ...	22	12	7	41	68	46	8	122
Environment	15	15	12	42	43	101	15	159
Environmental Centre	27	34	24	85	47	62	38	147
Environment Council	...	...	...	...	15	3	11	29
Executive Council	...	...	...	...	...	...	...	...
Hospitals & Medical Care	...	...	...	...	...	5	11	32
Housing	3	-	1	4	9	1	3	13

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TABLE 21. Total Expenditures in the Natural Sciences, by Activity, 1977-78 to 1984-85(e)

Activity	1977-78	1978-79	1979-80	1980-81	1981-82	1982-83	1983-84	1984-85(e)
(\$'000)								
Research and development:								
Current expenditures:								
In-house	3,355	2,001	4,842	6,737	11,156	14,514	15,128	16,238
Contracts	19,669	36,877	47,294	38,797	46,592	51,563	46,107	82,655
Grants	17,488	18,444	25,815	29,814	32,533	41,002	53,039	53,736
Research fellowships	152	110	202	85	267	283	473	348
Sub-total	40,664	57,432	78,153	75,433	90,548	107,362	114,747	152,977
Capital expenditures	590	2,381	1,380	1,408	1,929	8,020	11,409	4,354
Related scientific activities:								
Current expenditures	8,784	7,746	13,091	17,204	30,161	26,644	31,097	32,549
Capital expenditures	124	72	439	628	1,712	1,822	1,818	1,828
Total	50,162	67,631	93,063	94,673	124,350	143,848	159,071	191,708

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TABLE 22. Total Expenditures in the Natural Sciences, by Department or Agency, 1977-78 to 1984-85(e)

Department or Agency	1977-78	1978-79	1979-80	1980-81	1981-82	1982-83	1983-84	1984-85(e)
	(\$'000)							
Agricultural Research Trust ..	...	441	472	389	395	373	369	394
Agriculture	3,750	3,500	4,656	7,130	14,978	16,391	19,532	19,526
Business Development & Tourism	7,520	...	...	...	...	...	...	...
Culture	1,111(e)	969	777	510	986	578	798	877
Energy & Natural Resources ..	5,163	9,140	12,819	14,274	20,630	25,210	28,509	26,090
Environment	8,364	5,636	10,321	11,649	11,711	9,179	13,411	13,783
Environmental Centre	...	...	-	3,168	7,441	10,528	11,605	11,780
Executive Council	...	8,209	9,153	11,561	15,500	19,148	19,950	21,463
Hospitals & Medical Care	1,848	4,517	11,896	12,138	12,942	16,865	19,793	20,992
Housing	...	...	...	...	...	...	467	675
Labour	257(e)	263(e)	267(e)	340(e)	425(e)	548	483	492
Mental Health Research Fund ..	...	60	72	123	177	193	409	409
AOSIRA	18,737	32,746	40,195	30,988	35,335	41,105	40,639	72,647
Recreation & Parks	...	--	398	295	604	429	328	245
Recreation, Parks & Wildlife	889(e)	...	...	...	...	...	...	...
Transportation	2,564	1,888	1,811	1,932	3,050	3,262	2,587	2,246
Workers' Health, Safety & Compensation	...	262	276	176	176	39	191	89
Total	50,162	67,631	93,063	94,673	124,350	143,848	159,071	191,708

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TABLE 23. Total Expenditures in the Natural Sciences, by Performer, 1977-78 to 1984-85(e)

Performer	1977-78	1978-79	1979-80	1980-81	1981-82	1982-83	1983-84	1984-85(e)
	(\$'000)							
Intramural	9,456	9,905	15,584	16,201	35,487	45,049	53,272	48,751
Industry	22,995	35,607	43,979	36,743	35,871	35,452	34,448	72,902
Universities	1,817	3,700	5,090	6,473	8,502	16,032	12,905	11,536
Hospitals and health organizations	1,848	4,531	11,862	12,138	12,630	11,080	16,498	18,276
Alberta Research Council (1) .	10,741	12,874	14,009	20,587	27,745	32,349	35,038	35,393
Other	3,305	1,014	2,539	2,531	4,115	3,886	6,910	4,850
Total	50,162	67,631	93,063	94,673	124,350	143,848	159,071	191,708

(1) Annual funding by the Government of Alberta - other funds are not included.

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TABLE 24. Current Expenditures on R&D in the Natural Sciences, by Performer, 1977-78 to 1984-85(e)

Performer	1977-78	1978-79	1979-80	1980-81	1981-82	1982-83	1983-84	1984-85(e)
	(\$'000)							
Intramural	3,372	2,929	5,096	6,794	11,208	14,514	15,319	16,455
Industry	20,734	33,776	41,309	28,263	28,461	32,058	31,784	69,492
Universities	1,650	3,360	4,840	6,286	8,333	15,777	12,594	11,405
Hospitals and health organizations	1,848	4,531	11,862	12,138	12,630	11,080	16,433	18,216
Alberta Research Council (1) .	10,188	12,175	12,837	19,565	26,679	31,179	33,365	34,092
Other	2,872	661	2,209	2,387	3,237	2,754	5,252	3,317
Total	40,664	57,432	78,153	75,433	90,548	107,362	114,747	152,977

(1) Annual funding by the Government of Alberta - other funds are not included.

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TABLE 25. Current Expenditures on R&D in the Natural Sciences, by Department or Agency, 1977-78 to 1984-85(e)

Department or Agency	1977-78	1978-79	1979-80	1980-81	1981-82	1982-83	1983-84	1984-85(e)
	(\$'000)							
Agricultural Research Trust ..	...	441	472	389	395	373	369	394
Agriculture	3,750	3,500	4,656	7,130	10,978	13,699	15,782	13,941
Business Development & Tourism	7,520	...	...	...	...	...	...	...
Culture	261	188	173	-	-	-	-	-
Energy & Natural Resources ..	3,669	4,739	6,193	7,390	9,608	9,521	10,041	15,074
Environment	3,864	2,586	4,328	3,480	3,214	3,481	3,884	3,644
Environmental Centre	...	...	-	1,300	2,157	2,997	3,460	3,527
Executive Council	...	8,209	9,153	11,561	15,500	19,148	19,950	21,463
Hospitals & Medical Care	1,848	4,517	11,846	12,138	12,942	16,865	19,769	20,992
Housing	-	-	-	-	-	-	370	575
Mental Health Research Fund ..	...	60	72	123	177	193	409	409
AOSTRA	18,126	32,177	40,077	30,960	35,305	41,066	40,586	72,622
Recreation & Parks	...	-	-	-	-	-	27	19
Recreation, Parks & Wildlife	445(e)	...	...	...	...	...	...	...
Transportation	1,181	998	1,131	952	272	13	66	305
Workers' Health, Safety & Compensation	...	17	52	10	-	6	34	12
Total	40,664	57,432	78,153	75,433	90,548	107,362	114,747	152,977

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TABLE 26. Total Expenditures in the Natural Sciences, by Sources of Funds, 1983-84

Department or Agency	Departmental budget	Transfers from other departments	Transfers from federal government	Trust funds	Other sources	Total
	(\$'000)					
Agricultural Research Trust ..	-	250	-	-	119	369
Agriculture	11,678	-	-	7,854	-	19,532
Culture	798	-	-	-	-	798
Energy & Natural Resources ..	11,777	-	-	-	16,732	28,509
Environment	13,217	-	-	194	-	13,411
Environmental Centre	11,539	66	-	-	-	11,605
Executive Council	19,950	-	-	-	-	19,950
Hospitals & Medical Care	15,554	-	-	4,239	-	19,793
Housing	467	-	-	-	-	467
Labour	483	-	-	-	-	483
Mental Health Research Fund ..	-	409	-	-	-	409
AOSTRA	2,921	-	-	37,718	-	40,639
Recreation & Parks	166	-	-	-	162	328
Transportation	2,587	-	-	-	-	2,587
Workers' Health, Safety & Compensation	169	-	-	-	22	191
Total	91,306	725	-	50,005	17,035	159,071

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TABLE 27. Total Expenditures in the Natural Sciences, by Activity and Performer, 1983-84

Activity	Intra-mural	Industry	Universities	Hospitals and health organizations	Alberta Research Council	Other	Total
(\$'000)							
Research and development:							
Current expenditures:							
In-house	15,128	...	...	...	...	...	15,128
Contracts	20	31,150	4,467	-	9,344	1,126	46,107
Grants	171	634	7,654	16,433	24,021	4,126	53,039
Research fellowships	-	-	473	-	-	-	473
Sub-total	15,319	31,784	12,594	16,433	33,365	5,252	114,747
Capital expenditures	11,409	...	...	...	...	...	11,409
Related scientific activities:							
Current expenditures	24,726	2,664	311	65	1,673	1,658	31,097
Capital expenditures	1,818	...	...	...	...	...	1,818
Total	53,272	34,448	12,905	16,498	35,038	6,910	159,071

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TABLE 28. Total Expenditures in the Natural Sciences, by Department or Agency and Performer, 1983-84

Department or Agency	Intra-mural	Industry	Universities	Hospitals and health organizations	Alberta Research Council	Other	Total
	(\$'000)						
Agricultural Research Trust ..	27	-	342	-	-	-	369
Agriculture	8,294	493	3,484	-	4,071	3,190	19,532
Culture	798	-	-	-	-	-	798
Energy & Natural Resources ...	18,618	3,602	1,281	-	4,899	109	28,509
Environment	8,789	2,343	693	55	600	931	13,411
Environmental Centre	11,570	-	-	-	-	35	11,605
Executive Council	-	-	-	-	19,950	-	19,950
Hospitals & Medical Care	-	-	2,504	16,433	-	856	19,793
Housing	296	167	-	-	-	4	467
Labour	483	-	-	-	-	-	483
Mental Health Research Fund ..	-	-	409	-	-	-	409
AOSTRA	2,921	27,575	3,999	-	5,086	1,058	40,639
Recreation & Parks	145	37	146	-	-	-	328
Transportation	1,172	231	25	-	432	727	2,587
Workers' Health, Safety & Compensation	159	-	22	10	-	-	191
Total	53,272	34,448	12,905	16,498	35,038	6,910	159,071

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TABLE 29. Current Expenditures on R&D in the Natural Sciences, by Department or Agency and Performer, 1983-84

Department or Agency	Intra-mural	Industry	Universities	Hospitals and health organizations	Alberta Research Council	Other	Total
	(\$'000)						
Agricultural Research Trust ..	27	-	342	-	-	-	369
Agriculture	4,544	493	3,484	-	4,071	3,190	15,782
Energy & Natural Resources ...	2,132	2,913	1,153	-	3,734	109	10,041
Environment	2,093	608	659	-	524	-	3,884
Environmental Centre	3,425	-	-	-	-	35	3,460
Executive Council	-	-	-	-	19,950	-	19,950
Hospitals & Medical Care	-	-	2,504	16,433	-	832	19,769
Housing	211	155	-	-	-	4	370
Mental Health Research Fund ..	-	-	409	-	-	-	409
AOSTRA	2,868	27,575	3,999	-	5,086	1,058	40,586
Recreation & Parks	5	-	22	-	-	-	27
Transportation	2	40	-	-	-	24	66
Workers' Health, Safety & Compensation	12	-	22	-	-	-	34
Total	15,319	31,784	12,594	16,433	33,365	5,252	114,747

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TABLE 30. Application of Expenditures in the Natural Sciences, by Department or Agency, 1983-84

Department or Agency	Advancement of science	Communi- cations	Energy and fuels		Environmental issues
			Fossil fuels	Other	
(\$'000)					
Agricultural Research Trust .	-	-	-	-	-
Agriculture	-	-	-	-	-
Culture	-	-	-	-	-
Energy & Natural Resources ..	-	-	16,467	1,063	162
Environment	259	-	172	-	12,169
Environmental Centre	-	-	142	-	3,329
Executive Council	-	-	3,591	-	3,392
Hospitals & Medical Care	-	-	-	-	-
Housing	-	-	-	-	-
Labour	-	-	-	-	-
Mental Health Research Fund .	-	-	-	-	-
AOSTRA	9,085	-	28,633	2,921	-
Recreation & Parks	-	-	-	-	-
Transportation	-	-	-	-	-
Workers' Health, Safety & Compensation	-	-	-	-	-
Total	9,344	-	49,005	3,984	19,052

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TABLE 30. Application of Expenditures in the Natural Sciences, by Department or Agency, 1983-84 - Continued

Department or Agency	Health	Industrial and economic development				
		Agriculture	Fisheries	Forestry	Minerals	Other
(\$'000)						
Agricultural Research Trust .	-	369	-	-	-	-
Agriculture	-	19,532	-	-	-	-
Culture	-	-	-	-	-	-
Energy & Natural Resources ..	-	110	1,346	5,215	805	3,341
Environment	704	107	-	-	-	-
Environmental Centre	4,153	2,954	142	142	-	-
Executive Council	-	-	-	-	-	12,967
Hospitals & Medical Care	19,793	-	-	-	-	-
Housing	-	-	-	-	-	483
Labour	-	-	-	-	-	-
Mental Health Research Fund .	409	-	-	-	-	-
AOSTRA	-	-	-	-	-	-
Recreation & Parks	-	-	-	-	-	-
Transportation	-	-	-	-	-	-
Workers' Health, Safety & Compensation	191	-	-	-	-	-
Total	25,250	23,072	1,488	5,357	805	16,791

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TABLE 30. Application of Expenditures in the Natural Sciences, by Department or Agency, 1983-84 - Concluded

Department or Agency	Social development and related areas					Total
	Culture, sport and recreation	Education	Human resources	Urban and regional studies	Transportation	
	(\$'000)					
Agricultural Research Trust .	-	-	-	-	-	369
Agriculture	-	-	-	-	-	19,532
Culture	798	-	-	-	-	798
Energy & Natural Resources ..	-	-	-	-	-	28,509
Environment	-	-	-	-	-	13,411
Environmental Centre	743	-	-	-	-	11,605
Executive Council	-	-	-	-	-	19,950
Hospitals & Medical Care	-	-	-	-	-	19,793
Housing	-	-	-	467	-	467
Labour	-	-	-	-	-	483
Mental Health Research Fund .	-	-	-	-	-	409
AOSTRA	-	-	-	-	-	40,639
Recreation & Parks	328	-	-	-	-	328
Transportation	-	-	-	-	2,587	2,587
Workers' Health, Safety & Compensation	-	-	-	-	-	191
Total	1,869	-	-	467	2,587	159,071

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TABLE 31. Application of Expenditures in the Natural Sciences, by Activity, 1983-84

Application	Intramural		Extramural		Total
	Research and development	Related scientific activities	Research and development	Related scientific activities	
	(\$'000)				
Advancement of science	150	-	9,129	65	9,344
Energy and fuels:					
Fossil fuels	10,565	172	37,763	505	49,005
Other	2,995	-	741	248	3,984
Environmental issues	3,539	7,898	5,091	2,524	19,052
Health	1,060	3,690	20,224	276	25,250
Industrial and economic development:					
Agriculture	5,583	5,777	11,639	73	23,072
Fisheries	380	1,069	21	18	1,488
Forestry	1,132	2,573	1,361	291	5,357
Minerals	-	-	-	805	805
Other	560	2,975	13,214	42	16,791
Social development and related areas:					
Culture, sport and recreation ..	551	1,135	22	161	1,869
Urban and regional studies	211	85	159	12	467
Transportation	2	1,170	64	1,351	2,587
Total	26,728	26,544	99,428	6,371	159,071

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TABLE 32. Extramural R&D Expenditures in the Natural Sciences, by Sector of Performance and Application, 1983-84

Application	Industry	Universities	Hospitals and health organizations	Alberta Research Council	Other	Total
	(\$'000)					
Advancement of science	6,642	963	-	1,269	255	9,129
Energy and fuels:						
Fossil fuels	22,992	3,672	-	10,296	803	37,763
Other	275	86	-	380	-	741
Environmental issues	608	611	-	3,872	-	5,091
Health	-	2,959	16,433	-	832	20,224
Industrial and economic development:						
Agriculture	493	3,850	-	4,071	3,225	11,639
Fisheries	-	21	-	-	-	21
Forestry	332	410	-	510	109	1,361
Other	247	-	-	12,967	-	13,214
Social development and related areas:						
Culture, sport and recreation ..	-	22	-	-	-	22
Urban and regional studies	155	-	-	-	4	159
Transportation	40	-	-	-	24	64
Total	31,784	12,594	16,433	33,365	5,252	99,428

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TABLE 33. Departmental Personnel Engaged in Intramural Natural Science Activities, 1983-84

Department or Agency	Research and development			Related scientific activities		
	Scientific and professional	Technical	Other	Scientific and professional	Technical	Other
	(person-years)					
Agricultural Research Trust ...	...	...	...	...	...	...
Agriculture	55	75	-	70	95	...
Culture	...	...	...	9	9	...
Energy & Natural Resources ...	24	12	7	72	49	8
Environment	15	15	12	45	101	15
Environmental Centre	27	34	21	47	62	32
Executive Council	...	...	...	...	...	...
Hospitals & Medical Care	...	...	...	...	...	...
Housing	3	-	-	1	-	2
Labour	...	...	...	13	-	-
Mental Health Research Fund ...	...	...	...	...	...	...
AOSTRA	35	-	12	...	...	...
Recreation & Parks	...	...	...	2	1	3
Transportation	...	...	...	14	8	4
Workers' Health, Safety & Compensation	-	1	-	1	1	1
Total	159	137	52	274	326	65
		348				665

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TABLE 34. Total Expenditures in the Natural Sciences, by Activity and Performer, 1984-85(e)

Activity	Intra-mural	Industry	Universities	Hospitals and health organizations	Alberta Research Council	Other	Total
	(\$'000)						
Research and development:							
Current expenditures:							
In-house	16,238	-	-	-	-	-	16,238
Contracts	40	68,333	4,277	-	8,591	1,414	82,655
Grants	177	1,159	6,780	18,216	25,501	1,903	53,736
Research fellowships	-	-	348	-	-	-	348
Sub-total	16,455	69,492	11,405	18,216	34,092	3,317	152,977
Capital expenditures	4,354	-	-	-	-	-	4,354
Related scientific activities:							
Current expenditures	26,114	3,410	131	60	1,301	1,533	32,549
Capital expenditures	1,828	-	-	-	-	-	1,828
Total	48,751	72,902	11,536	18,276	35,393	4,850	191,708

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TABLE 35. Total Expenditures in the Natural Sciences, by Department or Agency and Performer, 1984-85(e)

Department or Agency	Intra-mural	Industry	Universities	Hospitals and health organizations	Alberta Research Council	Other	Total
	(\$'000)						
Agricultural Research Trust ..	30	-	364	-	-	-	394
Agriculture	10,712	859	2,316	-	3,836	1,803	19,526
Culture	877	-	-	-	-	-	877
Energy & Natural Resources ...	11,078	10,203	712	-	3,988	109	26,090
Environment	8,679	2,953	604	50	447	1,050	13,783
Environmental Centre	11,745	-	-	-	-	35	11,780
Executive Council	-	-	-	-	21,463	-	21,463
Hospitals & Medical Care	-	-	2,776	18,216	-	-	20,992
Housing & Public Works	325	350	-	-	-	-	675
Labour	492	-	-	-	-	-	492
Mental Health Research Fund ..	-	-	409	-	-	-	409
AOSTRA	3,466	58,380	4,250	-	5,245	1,306	72,647
Recreation & Parks	110	30	105	-	-	-	245
Transportation	1,158	127	-	-	414	547	2,246
Workers' Health, Safety & Compensation	79	-	-	10	-	-	89
Total	48,751	72,902	11,536	18,276	35,393	4,850	191,708

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TABLE 36. Current Expenditures on R&D in the Natural Sciences, by Department or Agency and Performer, 1984-85(e)

Department or Agency	Intra-mural	Industry	Universities	Hospitals and health organizations	Alberta Research Council	Other	Total
	(\$'000)						
Agricultural Research Trust ..	30	-	364	-	-	-	394
Agriculture	5,127	859	2,316	-	3,836	1,803	13,941
Energy & Natural Resources ..	2,011	9,357	687	-	2,910	109	15,074
Environment	2,050	561	586	-	447	-	3,644
Environmental Centre	3,492	-	-	-	-	35	3,527
Executive Council	-	-	-	-	21,463	-	21,463
Hospitals & Medical Care	-	-	2,776	18,216	-	-	20,992
Housing	245	330	-	-	-	-	575
Mental Health Research Fund ..	-	-	409	-	-	-	409
AOSTRA	3,441	58,380	4,250	-	5,245	1,306	72,622
Recreation & Parks	2	-	17	-	-	-	19
Transportation	45	5	-	-	191	64	305
Workers' Health, Safety & Compensation	12	-	-	-	-	-	12
Total	16,455	69,492	11,405	18,216	34,092	3,317	152,977

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TABLE 37. Application of Expenditures in the Natural Sciences, by Department or Agency, 1984-85(e)

Department or Agency	Advancement of science	Communi- cations	Energy and fuels		
			Fossil fuels	Other	Environmental issues
(\$'000)					
Agricultural Research Trust .	-	-	-	-	-
Agriculture	-	-	-	-	-
Culture	-	-	-	-	-
Energy & Natural Resources ..	-	-	14,075	1,792	60
Environment	215	-	170	-	12,558
Environmental Centre	-	-	144	-	3,379
Executive Council	-	-	3,863	-	3,649
Hospitals & Medical Care	-	-	-	-	-
Housing	-	-	-	-	-
Labour	-	-	-	-	-
Mental Health Research Fund .	-	-	-	-	-
AOSTRA	9,495	-	59,686	3,466	-
Recreation & Parks	-	-	-	-	-
Transportation	-	-	-	-	-
Workers' Health, Safety & Compensation	-	-	-	-	-
Total	9,710	-	77,938	5,258	19,646

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TABLE 37. Application of Expenditures in the Natural Sciences, by Department or Agency, 1984-85(e) - Continued

Department or Agency	Health	Industrial and economic development					
		Agriculture	Fisheries	Forestry	Manufac- turing	Minerals	Other
(\$'000)							
Agricultural Research Trust .	-	394	-	-	-	-	-
Agriculture	-	19,526	-	-	-	-	-
Culture	-	-	-	-	-	-	-
Energy & Natural Resources ..	-	117	1,208	5,285	-	830	2,723
Environment	778	62	-	-	-	-	-
Environmental Centre	4,216	2,999	144	144	-	-	-
Executive Council	-	-	-	-	-	-	13,951
Hospitals & Medical Care	20,992	-	-	-	-	-	-
Housing	-	-	-	-	-	-	492
Labour	-	-	-	-	-	-	-
Mental Health Research Fund .	409	-	-	-	-	-	-
AOSTRA	-	-	-	-	-	-	-
Recreation & Parks	-	-	-	-	-	-	-
Transportation	-	-	-	-	-	-	-
Workers' Health, Safety & Compensation	89	-	-	-	-	-	-
Total	26,484	23,098	1,352	5,429	-	830	17,166

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TABLE 37. Application of Expenditures in the Natural Sciences, by Department or Agency, 1984-85(e) - Concluded

Department or Agency	Social development and related areas					Total
	Culture, sport and recreation	Education	Human resources	Urban and regional studies	Transportation	
	(\$'000)					
Agricultural Research Trust .	-	-	-	-	-	394
Agriculture	-	-	-	-	-	19,526
Culture	877	-	-	-	-	877
Energy & Natural Resources ..	-	-	-	-	-	26,090
Environment	-	-	-	-	-	13,783
Environmental Centre	754	-	-	-	-	11,780
Executive Council	-	-	-	-	-	21,463
Hospitals & Medical Care	-	-	-	-	-	20,992
Housing	-	-	-	675	-	675
Labour	-	-	-	-	-	492
Mental Health Research Fund .	-	-	-	-	-	409
AOSTRA	-	-	-	-	-	72,647
Recreation & Parks	245	-	-	-	-	245
Transportation	-	-	-	-	2,246	2,246
Workers' Health, Safety & Compensation	-	-	-	-	-	89
Total	1,876	-	-	675	2,246	191,708

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TABLE 38. Application of Expenditures in the Natural Sciences, by Activity, 1984-85(e)

Application	Intramural		Extramural		Total
	Research and development	Related scientific activities	Research and development	Related scientific activities	
	(\$'000)				
Advancement of science	150	-	9,510	50	9,710
Energy and fuels:					
Fossil fuels	3,643	170	73,770	355	77,938
Other	3,689	-	1,321	248	5,258
Environmental issues	3,400	7,932	5,186	3,128	19,646
Health	1,011	3,715	21,425	333	26,484
Industrial and economic development:					
Agriculture	6,184	7,594	9,231	89	23,098
Fisheries	331	901	-	120	1,352
Forestry	1,134	2,643	1,361	291	5,429
Minerals	-	-	-	830	830
Other	421	2,609	14,111	25	17,166
Social development and related areas:					
Culture, sport and recreation ..	556	1,185	17	118	1,876
Urban and regional studies	245	80	330	20	675
Transportation	45	1,113	260	828	2,246
Total	20,809	27,942	136,522	6,435	191,708

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TABLE 39. Extramural R&D Expenditures in the Natural Sciences, by Sector of Performance and Application, 1984-85(e)

Application	Industry	Universities	Hospitals and health organizations	Alberta Research Council	Other	Total
	(\$'000)					
Advancement of science	8,013	583	-	735	179	9,510
Energy and fuels:						
Fossil fuels	59,242	3,934	-	9,467	1,127	73,770
Nuclear energy	-	-	-	-	-	-
Other	-	-	-	1,321	-	1,321
Environmental issues	561	544	-	4,081	-	5,186
Health	-	3,209	18,216	-	-	21,425
Industrial and economic development:						
Agriculture	859	2,698	-	3,836	1,838	9,231
Fisheries	-	-	-	-	-	-
Forestry	332	410	-	510	109	1,361
Other	150	10	-	13,951	-	14,111
Social development and related areas:						
Culture, sport and recreation	-	17	-	-	-	17
Urban and regional studies	330	-	-	-	-	330
Transportation	5	-	-	191	64	260
Total	69,492	11,405	18,216	34,092	3,317	136,522

Social Sciences and Humanities

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TABLE 41. Total Expenditures in the Social Sciences and Humanities, by Activity, 1977-78 to 1984-85(e)

Activity	1977-78	1978-79	1979-80	1980-81	1981-82	1982-83	1983-84	1984-85(e)
(\$'000)								
Research and development:								
Current expenditures:								
In-house	616	647	810	751	669	237	657	674
Contracts	821	1,141	1,428	762	564	406	551	586
Grants	631	1,290	1,479	890	1,028	1,038	1,228	1,400
Research fellowships	-	2	-	27	4	23	30	27
Sub-total	2,068	3,080	3,717	2,430	2,265	1,704	2,466	2,687
Capital expenditures	2	3	4	13	3	10	2	-
Related scientific activities:								
Current expenditures	12,781	11,693	13,386	17,582	25,604	27,394	27,620	28,153
Capital expenditures	6	188	171	92	39	205	81	28
Total	14,857	14,964	17,278	20,117	27,911	29,313	30,169	30,868

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TABLE 42. Total Expenditures in the Social Sciences and Humanities, by Department or Agency, 1977-78 to 1984-85(e)

Department or Agency	1977-78	1978-79	1979-80	1980-81	1981-82	1982-83	1983-84	1984-85(e)
	(\$'000)							
Advanced Education	...	...	...	...	...	...	1,354	1,723
Advanced Education & Manpower.	834	2,408	2,075	1,920	2,344	2,612	...	...
Agricultural Research Trust ..	...	20	-	-	-	-	-	-
Alcoholism & Drug Abuse								
Commission	232	248	282	375	497	264	320	290
Attorney General	299	238	260	290	290	290	436	407
Business Development & Tourism	3,246	...	...	...	...	...	...	...
Consumer & Corporate Affairs	90	62	75	89	120	143	172	167
Culture	2,051(e)	1,142	1,642	1,729	2,332(e)	2,255	3,036	3,036
Economic Development	...	2,117	3,125	3,484	5,857	4,093	3,374	3,400
Education	1,450	1,932	2,114	2,414	3,050	3,617(e)	2,724	3,479
Educational Communications								
Corporation ACCESS	-	263	215	165	182(e)	200(e)	398	405
Energy & Natural Resources ...	22	-	-	-	-	-	-	-
Environment	270	250	590	253	557	508	232	255
Environment Council	788	930	788	1,289	1,321	1,243	1,525	1,339
Hospitals & Medical Care	1,357	1,142	1,030	1,792	2,091	2,637	2,460	3,493
Housing	975	390	420	324	480	805	739	944

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TABLE 42. Total Expenditures in the Social Sciences and Humanities, by Department or Agency, 1977-78 to 1984-85(e) - Concluded

Department or Agency	1977-78	1978-79	1979-80	1980-81	1981-82	1982-83	1983-84	1984-85(e)
	(\$'000)							
Labour	219	266	379	353	462	557	564	504
Manpower	...	...	...	...	...	...	1,539	1,534
Mental Health Research Fund ..	...	122	158	355	183	193	345	345
Municipal Affairs	125	399	258	364	1,184	1,408	1,577	1,677
Recreation & Parks	...	--	182	283	306	511	207	140
Recreation, Parks & Wildlife	282(e)	...	...	...	...	...	...	...
Social Services & Community Health	725	535	630	733	933	100	270	290
Solicitor General	267	257	35	183	1,754	3,478	4,434	3,000
Tourism & Small Business	...	517	1,046	1,451	1,246	1,597	1,058	1,060
Transportation	-	-	-	-	-	-	377	272
Treasury	1,625	1,161	1,426	1,868	2,085	1,994	2,097	2,155
Workers' Compensation Board ..	-	165	-	-	-	-	-	-
Workers' Health, Safety & Compensation	...	400	548	403	637	808	931	953
Total	14,857	14,964	17,278	20,117	27,911	29,313	30,169	30,868

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TABLE 43. Total Expenditures in the Social Sciences and Humanities, by Performer, 1977-78 to 1984-85(e)

Performer	1977-78	1978-79	1979-80	1980-81	1981-82	1982-83	1983-84	1984-85(e)
	(\$'000)							
Intramural	9,383	9,382	11,086	13,355	17,991	16,871	17,578	19,563
Industry	3,151	2,172	3,032	4,088	7,158	9,050	8,540	7,008
Universities	321	1,708	1,901	1,597	1,637	1,859	1,658	1,938
Hospitals and health organizations	805	687	468	183	171	111	213	217
Alberta Research Council	-	-	-	2	5	5	5	5
Other	1,197	1,015	791	892	949	1,417	2,175	2,137
Total	14,857	14,964	17,278	20,117	27,911	29,313	30,169	30,868

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TABLE 44. Current Expenditures on R&D in the Social Sciences and Humanities, by Performer, 1977-78 to 1984-85(e)

Performer	1977-78	1978-79	1979-80	1980-81	1981-82	1982-83	1983-84	1984-85(e)
	(\$'000)							
Intramural	855	957	1,084	831	669	290	681	693
Industry	494	620	832	491	440	521	423	557
Universities	281	893	1,161	751	756	643	1,023	1,068
Hospitals and health organizations	130	254	213	178	171	111	213	217
Alberta Research Council	-	-	-	2	5	5	5	5
Other	308	356	427	177	224	134	121	147
Total	2,068	3,080	3,717	2,430	2,265	1,704	2,466	2,687

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TABLE 45. Current Expenditures on R&D in the Social Sciences and Humanities, by Department or Agency, 1977-78 to 1984-85(e)

Department or Agency	1977-78	1978-79	1979-80	1980-81	1981-82	1982-83	1983-84	1984-85(e)
	(\$'000)							
Advanced Education	-	320	550	-	-	-	19	65
Agricultural Research Trust ..	...	20	-	-	-	-	-	-
Alcoholism & Drug Abuse Commission	-	57	93	118	7	7	1	1
Attorney General	219	238	260	290	290	290	436	407
Business Development & Tourism ..	14	...	...	...	...	...	...	...
Consumer & Corporate Affairs ..	45	-	-	-	-	-	-	-
Culture	-	157	363	377	594(e)	296	773	773
Education	1,020	1,203	1,137	438	381	285(e)	300	383
Educational Communications Corporation ACCESS	-	-	5	5	6(e)	7(e)	-	-
Environment	-	250	483	41	45	-	-	-
Hospitals & Medical Care	136	144	227	143	446	111	111	111
Housing	-	-	-	37	100	385	-	130
Manpower	...	...	...	...	...	...	90	100
Mental Health Research Fund ..	...	122	144	355	183	193	345	345
Municipal Affairs	102	322	166	220	105	68	53	12
Recreation & Parks	...	--	-	-	-	-	-	-
Recreation, Parks & Wildlife	4(e)	...	...	...	...	...	...	...
Social Services & Community Health	308	76	84	93	-	-	-	...
Solicitor General	-	-	35	24	-	-	-	-
Tourism & Small Business	...	-	-	79	-	-	-	-
Treasury	220	35	48	203	61	-	-	-
Workers' Compensation Board ..	-	36	-	-	-	-	-	-
Workers' Health, Safety & Compensation	...	100	122	7	47	62	338	360
Total	2,068	3,080	3,717	2,430	2,265	1,704	2,466	2,687

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TABLE 46. Total Expenditures in the Social Sciences and Humanities, by Sources of Funds, 1983-84

Department or Agency	Departmental budget	Transfers from other departments	Transfers from federal government	Trust funds	Other sources	Total
	(\$'000)					
Advanced Education	1,354	-	-	-	-	1,354
Alcoholism & Drug Abuse						
Commission	320	-	-	-	-	320
Attorney General	436	-	-	-	-	436
Consumer & Corporate Affairs ..	158	14	-	-	-	172
Culture	2,927	101	8	-	-	3,036
Economic Development	3,374	-	-	-	-	3,374
Education	2,655	-	69	-	-	2,724
Educational Communications						
Corporation ACCESS	380	18	-	-	-	398
Environment	131	-	-	101	-	232
Environment Council	1,525	-	-	-	-	1,525
Hospitals & Medical Care	2,456	4	-	-	-	2,460
Housing	739	-	-	-	-	739
Labour	564	-	-	-	-	564
Manpower	1,539	-	-	-	-	1,539
Mental Health Research Fund ..	-	345	-	-	-	345
Municipal Affairs	1,577	-	-	-	-	1,577
Recreation & Parks	144	-	-	-	63	207
Social Services & Community Health	270	-	-	-	-	270
Solicitor General	4,434	-	-	-	-	4,434
Tourism & Small Business	1,058	-	-	-	-	1,058
Transportation	377	-	-	-	-	377
Treasury	2,097	-	-	-	-	2,097
Workers' Health, Safety & Compensation	111	-	-	397	423	931
Total	28,626	482	77	498	486	30,169

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TABLE 47. Total Expenditures in the Social Sciences and Humanities, by Activity and Performer, 1983-84

Activity	Intra-mural	Industry	Universities	Hospitals and health organizations	Alberta Research Council	Other	Total
(\$'000)							
Research and development:							
Current expenditures:							
In-house	657	-	-	-	-	-	657
Contracts	24	423	-	-	-	104	551
Grants	-	-	993	213	5	17	1,228
Research fellowships	-	-	30	-	-	-	30
Sub-total	681	423	1,023	213	5	121	2,466
Capital expenditures	2	-	-	-	-	-	2
Related scientific activities:							
Current expenditures	16,814	8,117	635	-	-	2,054	27,620
Capital expenditures	81	-	-	-	-	-	81
Total	17,578	8,540	1,658	213	5	2,175	30,169

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TABLE 48. Total Expenditures in the Social Sciences and Humanities, by Department or Agency and Performer, 1983-84

Department or Agency	Intra-mural	Industry	Universities	Hospitals and health organizations	Alberta Research Council	Other	Total
(\$'000)							
Advanced Education	401	30	626	1	-	296	1,354
Alcoholism & Drug Abuse Commission	212	108	-	-	-	-	320
Attorney General	-	-	436	-	-	-	436
Consumer & Corporate Affairs ..	172	-	-	-	-	-	172
Culture	1,796	1,129	-	-	-	111	3,036
Economic Development	1,600	1,774	-	-	-	-	3,374
Education	1,239	770	-	-	5	710	2,724
Educational Communications Corporation ACCESS	274	124	-	-	-	-	398
Environment	15	192	-	-	-	25	232
Environment Council	1,525	-	-	-	-	-	1,525
Hospitals & Medical Care	1,647	-	-	111	-	702	2,460
Housing	671	68	-	-	-	-	739
Labour	479	-	-	-	-	85	564
Manpower	1,420	115	4	-	-	-	1,539
Mental Health Research Fund ..	-	-	231	101	-	13	345
Municipal Affairs	1,351	149	-	-	-	77	1,577
Recreation & Parks	63	98	23	-	-	23	207
Social Services & Community Health	270	-	-	-	-	-	270
Solicitor General	1,259	3,175	-	-	-	-	4,434
Tourism & Small Business	509	532	-	-	-	17	1,058
Transportation	-	261	-	-	-	116	377
Treasury	2,097	-	-	-	-	-	2,097
Workers' Health, Safety & Compensation	578	15	338	-	-	-	931
Total	17,578	8,540	1,658	213	5	2,175	30,169

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TABLE 49. Current Expenditures on R&D in the Social Sciences and Humanities, by Department or Agency and Performer, 1983-84

Department or Agency	Intra-mural	Industry	Universities	Hospitals and health organizations	Alberta Research Council	Other	Total
	(\$'000)						
Advanced Education	-	-	18	1	-	-	19
Alcoholism & Drug Abuse Commission	1	-	-	-	-	-	1
Attorney General	-	-	436	-	-	-	436
Culture	426	323	-	-	-	24	773
Education	206	10	-	-	5	79	300
Hospitals & Medical Care	-	-	-	111	-	-	111
Manpower	-	90	-	-	-	-	90
Mental Health Research Fund ..	-	-	231	101	-	13	345
Municipal Affairs	48	-	-	-	-	5	53
Workers' Health, Safety & Compensation	-	-	338	-	-	-	338
Total	681	423	1,023	213	5	121	2,466

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TABLE 50. Application of Expenditures in the Social Sciences and Humanities, by Department or Agency, 1983-84

Department or Agency	Advancement of science	Energy and fuels			Environmental issues
		Communi- cations	Fossil fuels	Other	
(\$'000)					
Advanced Education	-	-	-	-	-
Alcoholism & Drug Abuse Commission	-	-	-	-	-
Attorney General	-	-	-	-	-
Consumer & Corporate Affairs .	-	-	-	-	-
Culture	155	-	-	-	-
Economic Development	-	-	-	-	-
Education	-	-	-	-	-
Educational Communications Corporation ACCESS	-	-	-	-	-
Environment	-	-	-	-	99
Environment Council	-	-	-	-	1,525
Hospitals & Medical Care	-	-	-	-	-
Housing	-	-	-	-	-
Labour	-	-	-	-	-
Manpower	-	-	-	-	-
Mental Health Research Fund ..	-	-	-	-	-
Municipal Affairs	-	-	-	-	-
Recreation & Parks	-	-	-	-	-
Social Services & Community Health	-	-	-	-	-
Solicitor General	-	-	-	-	-
Tourism & Small Business	-	-	-	-	30
Transportation	-	-	-	-	-
Treasury	-	-	-	-	-
Workers' Health, Safety & Compensation	-	-	-	-	-
Total	155	-	-	-	1,654

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TABLE 50. Application of Expenditures in the Social Sciences and Humanities, by Department or Agency, 1983-84 - Continued

Department or Agency	Health	Industrial and economic development					Other
		Agriculture	Fisheries	Forestry	Manufacturing	Minerals	
Advanced Education	19	-	-	-	-	-	-
Alcoholism & Drug Abuse Commission	320	-	-	-	-	-	-
Attorney General	-	-	-	-	-	-	-
Consumer & Corporate Affairs ..	-	-	-	-	-	-	-
Culture	-	-	-	-	-	-	64
Economic Development	-	58	-	79	1,659	-	457
Education	-	-	-	-	-	-	-
Educational Communications Corporation ACCESS	-	-	-	-	-	-	-
Environment	-	-	-	-	-	-	133
Environment Council	-	-	-	-	-	-	-
Hospitals & Medical Care	2,460	-	-	-	-	-	-
Housing	-	-	-	-	-	-	-
Labour	-	-	-	-	-	-	-
Manpower	-	-	-	-	-	-	-
Mental Health Research Fund ..	345	-	-	-	-	-	-
Municipal Affairs	-	-	-	-	-	-	-
Recreation & Parks	-	-	-	-	-	-	-
Social Services & Community Health	-	-	-	-	-	-	-
Solicitor General	-	-	-	-	-	-	-
Tourism & Small Business	-	27	-	25	-	-	811
Transportation	-	-	-	-	-	-	-
Treasury	-	-	-	-	-	-	-
Workers' Health, Safety & Compensation	931	-	-	-	-	-	-
Total	4,075	85	-	104	1,659	-	1,465

(\$'000)

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TABLE 50. Application of Expenditures in the Social Sciences and Humanities, by Department, 1983-84 - Concluded

Department or Agency	Social development and related areas					Total
	Culture, sport and recreation	Education	Human resources	Urban and regional studies	Other	
Advanced Education	-	1,290	-	45	-	1,354
Alcoholism & Drug Abuse Commission	-	-	-	-	-	320
Attorney General	-	-	-	-	436	436
Consumer & Corporate Affairs ..	-	-	-	-	172	172
Culture	-	24	-	50	2,743	3,036
Economic Development	-	-	-	-	-	3,374
Education	-	2,724	-	-	-	2,724
Educational Communications Corporation ACCESS	-	398	-	-	-	398
Environment	-	-	-	-	-	232
Environment Council	-	-	-	-	-	1,525
Hospitals & Medical Care	-	-	-	739	-	2,460
Housing	-	-	-	-	-	739
Labour	-	-	479	-	85	564
Manpower	-	-	1,539	-	-	1,539
Mental Health Research Fund ..	-	-	-	-	-	345
Municipal Affairs	-	-	-	1,577	-	1,577
Recreation & Parks	205	-	-	-	2	207
Social Services & Community Health	-	-	-	-	270	270
Solicitor General	-	-	-	-	4,434	4,434
Tourism & Small Business	-	60	30	75	-	1,058
Transportation	-	-	-	217	-	377
Treasury	-	-	-	-	2,097	2,097
Workers' Health, Safety & Compensation	-	-	-	-	-	931
Total	205	4,496	2,048	2,703	10,239	30,169

(\$'000)

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TABLE 51. Application of Expenditures in the Social Sciences and Humanities, by Activity, 1983-84

Application	Intramural		Extramural			Total
	Research and development	Related scientific activities	Research and development	Related scientific activities		
	(\$'000)					
Advancement of science	-	-	155	-	-	155
Communications	-	-	-	-	-	-
Energy and fuels:						
Fossil fuels	-	-	-	-	-	-
Other	-	-	-	-	-	-
Environmental issues	-	1,539	-	115	-	1,654
Health	1	2,436	813	825	-	4,075
Industrial and economic development:						
Agriculture	-	10	-	75	-	85
Fisheries	-	-	-	-	-	-
Forestry	-	55	-	49	-	104
Manufacturing	-	900	-	759	-	1,659
Minerals	-	-	-	-	-	-
Other	64	670	-	731	-	1,465
Social development and related areas:						
Culture, sport and recreation ..	-	63	-	142	-	205
Education	208	1,731	118	2,439	-	4,496
Human resources	-	1,899	90	59	-	2,048
Urban and regional studies	48	1,974	55	626	-	2,703
Other	362	5,168	554	4,155	-	10,239
Transportation	-	450	-	831	-	1,281
Other	-	-	-	-	-	-
Total	683	16,895	1,785	10,806		30,169

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TABLE 52. Extramural R&D Expenditures in the Social Sciences and Humanities, by Sector of Performance and Application, 1983-84

Application	Industry	Universities	Hospitals and health organizations	Alberta Research Council	Other	Total
	(\$'000)					
Advancement of science	155	-	-	-	-	155
Communications	-	-	-	-	-	-
Energy and fuels:						
Fossil fuels	-	-	-	-	-	-
Other	-	-	-	-	-	-
Environmental issues	-	-	-	-	-	-
Health	-	587	213	-	13	813
Industrial and economic development:						
Agriculture	-	-	-	-	-	-
Fisheries	-	-	-	-	-	-
Forestry	-	-	-	-	-	-
Manufacturing	-	-	-	-	-	-
Minerals	-	-	-	-	-	-
Other	-	-	-	-	-	-
Social development and related areas:						
Culture, sport and recreation ..	-	-	-	-	-	-
Education	10	-	-	5	103	118
Human resources	90	-	-	-	-	90
Urban and regional studies	50	-	-	-	5	55
Other	118	436	-	-	-	554
Transportation	-	-	-	-	-	-
Other	-	-	-	-	-	-
Total	423	1,023	213	5	121	1,785

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TABLE 53. Departmental Personnel Engaged in Social Science Activities, by Department or Agency, 1983-84

Department or Agency	Research and development			Related scientific activities			
	Scientific and professional	Technical	Other	Total	Scientific and professional	Technical	Other Total
(person-years)							
Advanced Education	...	...	...	...	14	-	1 15
Alcoholism & Drug Abuse Commission	...	...	...	...	3	2	1 6
Attorney General	...	...	...	...	-	-	-
Consumer & Corporate Affairs	...	...	...	...	4	-	2 6
Culture	11	-	2	13	32	5	17 54
Economic Development	...	...	...	...	65	-	10 75
Education	4	-	2	6	10	2	10 22
Educational Communications Corporation ACCESS	...	...	...	...	...	...	...
Environment	-	-	-	-	5	1	- 6
Environment Council	...	...	...	...	17	3	12 32
Hospitals & Medical Care	...	...	...	...	15	6	12 33
Housing	...	...	...	...	7	1	3 11
Labour	...	...	...	...	8	2	6 16
Manpower	...	...	...	...	29	-	11 40
Municipal Affairs	1	-	1	2	20	2	8 30
Recreation & Parks	...	...	...	...	1	1	- 2
Social Services & Community Health	...	...	...	...	8	2	- 10
Solicitor General	...	...	...	...	14	18	7 39
Tourism & Small Business	...	...	...	...	13	3	5 21
Treasury	...	...	...	...	27	4	24 55
Workers' Health, Safety & Compensation	...	...	...	...	6	4	2 12
Total	16	-	5	21	298	56	131 485

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TABLE 54. Total Expenditures in the Social Sciences and Humanities, by Activity and Performer, 1984-85(e)

Activity	Intra-mural	Industry	Universities	Hospitals and health organizations	Alberta Research Council	Other	Total
(\$'000)							
Research and development:							
Current expenditures:							
In-house	674	-	-	-	-	-	674
Contracts	19	427	10	-	-	130	586
Grants	-	130	1,031	217	5	17	1,400
Research fellowships	-	-	27	-	-	-	27
Sub-total	693	557	1,068	217	5	147	2,687
Capital expenditures	-	-	-	-	-	-	-
Related scientific activities:							
Current expenditures	18,842	6,451	870	-	-	1,990	28,153
Capital expenditures	28	-	-	-	-	-	28
Total	19,563	7,008	1,938	217	5	2,137	30,868

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TABLE 55. Total Expenditures in the Social Sciences and Humanities, by Department or Agency and Performer, 1984-85(e)

Department or Agency	Intra-mural	Industry	Universities	Hospitals and health organizations	Alberta Research Council	Other	Total
(\$'000)							
Advanced Education	462	30	860	5	-	366	1,723
Alcoholism & Drug Abuse							
Commission	212	78	-	-	-	-	290
Attorney General	167	-	407	-	-	-	407
Consumer & Corporate Affairs .							167
Culture	1,796	1,129	-	-	-	111	3,036
Economic Development	1,600	1,800	-	-	-	-	3,400
Education	1,572	926	60	-	5	916	3,479
Educational Communications							
Corporation ACCESS	255	150	-	-	-	-	405
Environment	23	-	-	-	-	232	255
Environment Council	1,339	-	-	-	-	-	1,339
Hospitals & Medical Care	3,242	-	-	111	-	140	3,493
Housing	678	266	-	-	-	-	944
Labour	504	-	-	-	-	-	504
Manpower	1,377	157	-	-	-	-	1,534
Mental Health Research Fund ..	-	-	231	101	-	13	345
Municipal Affairs	1,513	107	-	-	-	57	1,677
Recreation & Parks	60	30	20	-	-	30	140
Social Services & Community							
Health	290	-	-	-	-	-	290
Solicitor General	1,200	1,800	-	-	-	-	3,000
Tourism & Small Business	540	500	-	-	-	20	1,060
Transportation	-	20	-	-	-	252	272
Treasury	2,155	-	-	-	-	-	2,155
Workers' Health, Safety & Compensation	578	15	360	-	-	-	953
Total	19,563	7,008	1,938	217	5	2,137	30,868

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TABLE 56. Current Expenditures on R&D in the Social Sciences and Humanities, by Department or Agency and Performer, 1984-85(e)

Department or Agency	Intra-mural	Industry	Universities	Hospitals and health organizations	Alberta Research Council	Other	Total
(\$'000)							
Advanced Education	-	-	60	5	-	-	65
Alcoholism & Drug Abuse Commission	1	-	-	-	-	-	1
Attorney General	-	-	407	-	-	-	407
Culture	426	323	-	-	-	24	773
Education	254	4	10	-	5	110	383
Hospitals & Medical Care	-	-	-	111	-	-	111
Housing	-	130	-	-	-	-	130
Manpower	-	100	-	-	-	-	100
Mental Health Research Fund ..	-	-	231	101	-	13	345
Municipal Affairs	12	-	-	-	-	-	12
Workers' Health, Safety & Compensation	-	-	360	-	-	-	360
Total	693	557	1,068	217	5	147	2,687

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TABLE 57. Application of Expenditures in the Social Sciences and Humanities, by Department or Agency, 1984-85(e)

Department or Agency	Advancement of science	Communi- cations	Energy and fuels			Environmental issues
			Fossil fuels	Other		
Advanced Education	-	-	-	-	-	-
Alcoholism & Drug Abuse Commission	-	-	-	-	-	-
Attorney General	-	-	-	-	-	-
Consumer & Corporate Affairs ..	-	-	-	-	-	-
Culture	155	-	-	-	-	-
Economic Development	-	-	-	-	-	-
Education	-	-	-	-	-	-
Educational Communications Corporation ACCESS	-	-	-	-	-	-
Environment	-	-	-	-	-	20
Environment Council	-	-	-	-	-	1,339
Hospitals & Medical Care	-	-	-	-	-	-
Housing	-	-	-	-	-	-
Labour	-	-	-	-	-	-
Manpower	-	-	-	-	-	-
Mental Health Research Fund ..	-	-	-	-	-	-
Municipal Affairs	-	-	-	-	-	-
Recreation & Parks	-	-	-	-	-	-
Social Services and Commu. ..	-	-	-	-	-	-
Health	-	-	-	-	-	-
Solicitor General	-	-	-	-	-	-
Tourism & Small Business	-	-	-	-	-	-
Transportation	-	-	-	-	-	20
Treasury	-	-	-	-	-	-
Workers' Health, Safety & Compensation	-	-	-	-	-	-
Total	155	-	-	-	-	1,379

(\$'000)

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TABLE 57. Application of Expenditures in the Social Sciences and Humanities, by Department or Agency, 1984-85(e)
- Continued

Department or Agency	Industrial and economic development						
	Health	Agriculture	Fisheries	Forestry	Manufac- turing	Minerals	Other
	(\$'000)						
Advanced Education	65	-	-	-	-	-	-
Alcoholism & Drug Abuse Commission	290	-	-	-	-	-	-
Attorney General	-	-	-	-	-	-	-
Consumer & Corporate Affairs ..	-	-	-	-	-	-	-
Culture	-	-	-	-	-	-	64
Economic Development	-	-	-	80	1,660	-	460
Education	60	-	-	-	-	-	-
Educational Communications Corporation ACCESS	-	-	-	-	-	-	-
Environment	-	-	-	-	-	-	235
Environment Council	-	-	-	-	-	-	-
Hospitals & Medical Care	3,493	-	-	-	-	-	-
Housing	-	-	-	-	-	-	-
Labour	-	-	-	-	-	-	-
Manpower	-	-	-	-	-	-	-
Mental Health Research Fund ..	345	-	-	-	-	-	-
Municipal Affairs	-	-	-	-	-	-	-
Recreation & Parks	-	-	-	-	-	-	-
Social Services and Community Health	-	-	-	-	-	-	-
Solicitor General	-	-	-	-	-	-	-
Tourism & Small Business	10	-	30	-	-	-	860
Transportation	-	-	-	-	-	-	-
Treasury	-	-	-	-	-	-	-
Workers' Health, Safety & Compensation	953	-	-	-	-	-	-
Total	5,156	60	30	80	1,660	-	1,619

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TABLE 57. Application of Expenditures in the Social Sciences and Humanities, by Department or Agency, 1984-85(e)
- Concluded

Department or Agency	Social development and related areas						Total
	Culture, sport and recreation	Education	Human resources	Urban and regional studies	Other	Transportation	
Advanced Education	-	1,593	-	65	-	-	1,723
Alcoholism & Drug Abuse Commission	-	-	-	-	-	-	290
Attorney General	-	-	-	-	407	-	407
Consumer & Corporate Affairs ..	-	-	-	-	167	-	167
Culture	-	24	-	50	2,743	-	3,036
Economic Development	-	-	-	-	-	-	3,400
Education	-	3,479	-	-	-	1,140	3,479
Educational Communications Corporation ACCESS	-	405	-	-	-	-	405
Environment	-	-	-	-	-	-	255
Environment Council	-	-	-	-	-	-	1,339
Hospitals & Medical Care	-	-	-	-	-	-	3,493
Housing	-	-	-	944	-	-	944
Labour	-	-	504	-	-	-	504
Manpower	-	-	1,534	-	-	-	1,534
Mental Health Research Fund ..	-	-	-	-	-	-	345
Municipal Affairs	-	-	-	-	-	-	1,677
Recreation & Parks	140	-	-	1,677	-	-	1,40
Social Services and Community.	-	-	-	-	290	-	290
Solicitor General	-	-	-	-	3,000	-	3,000
Tourism & Small Business	-	50	-	90	-	-	1,060
Transportation	-	-	-	143	-	129	272
Treasury	-	-	-	-	2,155	-	2,155
Workers' Health, Safety & Compensation	-	-	-	-	-	-	953
Total	140	5,551	2,038	2,969	8,762	1,269	30,868

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TABLE 58. Application of Expenditures in the Social Sciences and Humanities, by Activity, 1984-85(e)

Application	Intramural		Extramural		Total
	Research and development	Related scientific activities	Research and development	Related scientific activities	
	(\$'000)				
Advancement of science	-	-	155	-	155
Communications	-	-	-	-	-
Energy and fuels:					
Fossil fuels	-	-	-	-	-
Other	-	-	-	-	-
Environmental issues	-	1,339	-	40	1,379
Health	1	4,041	881	233	5,156
Industrial and economic development:					
Agriculture	-	-	-	60	60
Fisheries	-	10	-	20	30
Forestry	-	50	-	30	80
Manufacturing	-	900	-	760	1,660
Minerals	-	-	-	-	-
Other	64	713	-	842	1,619
Social development and related areas:					
Culture, sport and recreation..	-	60	-	80	140
Education	254	2,055	153	3,089	5,551
Human resources	-	1,881	100	57	2,038
Urban and regional studies	12	2,189	180	588	2,969
Other	362	5,182	525	2,693	8,762
Transportation	-	450	-	819	1,269
Other	-	-	-	-	-
Total	693	18,870	1,994	9,311	30,068

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TABLE 59. Extramural R&D Expenditures in the Social Sciences and Humanities, by Sector of Performance and Application, 1984-85(e)

Application	Industry	Universities	Hospitals and health organizations	Alberta Research Council	Other	Total
	(\$'000)					
Advancement of science	155	-	-	-	-	155
Communications	-	-	-	-	-	-
Energy and fuels:						
Fossil fuels	-	-	-	-	-	-
Hydro electric energy	-	-	-	-	-	-
Nuclear energy	-	-	-	-	-	-
Other	-	-	-	-	-	-
Environmental issues	-	-	-	-	-	-
Health	-	651	217	-	13	881
Industrial and economic development:						
Agriculture	-	-	-	-	-	-
Fisheries	-	-	-	-	-	-
Forestry	-	-	-	-	-	-
Manufacturing	-	-	-	-	-	-
Minerals	-	-	-	-	-	-
Other	-	-	-	-	-	-
Social development and related areas:						
Culture, sport and recreation..	-	-	-	-	-	-
Education	4	10	-	5	134	153
Human resources	100	-	-	-	-	100
Urban and regional studies	180	-	-	-	-	180
Other	118	407	-	-	-	525
Transportation	-	-	-	-	-	-
Other	-	-	-	-	-	-
Total	557	1,068	217	5	147	1,994

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TABLE 60. Departmental Personnel Engaged in Social Science Activities, by Department or Agency, 1984-85(e)

Department or Agency	Research and development			Related scientific activities				
	Scientific and professional	Technical	Other	Total	Scientific and professional	Technical	Other	Total
(person-years)								
Advanced Education	...	...	...	...	16	-	2	18
Alcoholism & Drug Abuse Commission	...	...	...	...	3	2	1	6
Attorney General	...	...	...	...	...	...	...	...
Consumer & Corporate Affairs	...	...	...	...	4	-	1	5
Culture	11	-	2	13	32	5	17	54
Economic Development	...	...	...	...	65	-	10	75
Education	5	-	2	7	11	2	10	23
Educational Communications Corporation ACCESS	...	...	...	...	5	1	-	6
Environment	...	...	...	...	...	...	...	...
Environment Council	...	...	...	...	15	3	11	29
Hospitals & Medical Care	...	...	...	...	16	5	11	32
Housing	...	...	...	...	8	1	2	11
Labour	...	...	...	...	9	2	6	17
Manpower	...	...	...	...	29	-	13	42
Mental Health Research Fund	...	...	...	...	...	...	...	...
Municipal Affairs	-	-	1	1	23	2	8	33
Recreation & Parks	...	...	...	...	2	-	-	2
Social Services & Community Health	...	...	...	...	8	2	-	10
Solicitor General	...	...	...	...	14	17	7	38
Tourism & Small Business	...	...	...	...	11	6	6	23
Transportation	...	...	...	...	...	...	...	...
Treasury	...	...	...	...	27	4	22	53
Workers' Health, Safety & Compensation	...	...	...	...	6	4	2	12
Total	16	-	5	21	304	56	129	489

APPENDIX

DEFINITIONS

This report covers those scientific and technological activities which involve the generation, dissemination and application of new scientific and technological knowledge. The central activity is research and experimental development (R&D). In addition, there are a number of related scientific activities (RSA) which are considered in less detail.

R&D is creative work undertaken on a systematic basis in order to increase the stock of knowledge, including knowledge of man, culture and society and the use of this stock of knowledge to devise new applications. It requires the acquisition of knowledge and not just information. New knowledge involves the integration of newly acquired information into existing hypotheses, the formulation and testing of new hypotheses or the re-evaluation of existing observations.

The major related scientific activities (RSA) are technical surveys, statistical surveys, information services, special services and studies, and museum services. Statistical surveys, information services and museum services are largely self-explanatory the other two are described below.

Technical surveys are activities directed towards the exploration and systematic description of the earth and its natural resources. The activities include the gathering, processing, collating and analyzing of data on natural phenomena except when part of a research project or a museum service. The preparation of maps and survey reports, their printing and cataloguing, are also included.

Special services and studies in the natural sciences are activities directed towards the establishment of national and provincial standards for materials, devices, products and processes; the calibration of secondary standards; non-routine quality testing; feasibility studies and demonstration projects. In the social sciences, special services and studies are systematic investigations carried out in order to provide information needed for planning or policy formulation, including feasibility studies, and demonstration projects.

Activities are either natural sciences or social sciences and humanities. Natural sciences consist of disciplines concerned with the understanding, exploring, developing or utilizing the natural world. Included are the engineering, mathematical, environmental, life and physical sciences. Social sciences and humanities include all disciplines involving the study of human actions and conditions and the social, economic and institutional mechanisms affecting humans. Included are such disciplines as anthropology, business administration and commerce, communications, criminology, demography, economics, geography, history, languages, literature and linguistics, law, library science, philosophy, political science, psychology, religious studies, social work, sociology and urban and regional studies.

DEFINITIONS - Concluded

Five performing sectors are identified besides the Alberta Research Council. Intramural refers to the provincial ministry or agency performing a scientific activity. Industry consists principally of private corporations but also includes crown corporations with a commercial function (e.g., power utilities) and industrial research institutes not controlled by another sector. Universities cover postsecondary educational institutions and affiliated teaching and research facilities. Hospitals and health organizations are health organizations such as the Heart Foundation and hospitals which do not belong to the university sector. Other includes non-resident performers of scientific activities funded by the provincial government, as well as recipients not covered elsewhere such as the Federal Government, other provincial ministries and individuals.

Expenditures are either current or capital. Current expenditures include those costs for personnel, transportation and communications, information, professional and special services, rentals, purchased repair and upkeep, utilities, materials and supplies. Capital expenditures are those on the construction and acquisition of land, buildings, machinery and equipment. Total expenditures include current plus capital.

Alberta Departments Included in the Provincial Government Science Survey

1974-75	1975-76	1976-77	1977-78	1978-79
Advanced Education	Advanced Education & Manpower	Advanced Education & Manpower	Advanced Education & Manpower	Advanced Education & Manpower
Agriculture (e)	Agriculture (e)	Agriculture (e)	Agriculture	Agriculture
				Agricultural Research Trust
				Alcoholism & Drug Abuse Commission
	Attorney General	Attorney General	Attorney General	Attorney General
Business Development & Tourism	Business Development & Tourism	Business Development & Tourism	Business Development & Tourism	
Consumer & Corporate Affairs	Consumer & Corporate Affairs	Consumer & Corporate Affairs	Consumer & Corporate Affairs	Consumer & Corporate Affairs
Culture, Youth & Recreation	Culture (e)	Culture	Culture	Culture
				Economic Development
Education (e)	Education	Education	Education	Education
	Educational Communications Corporation	Educational Communications Corporation	Educational Communications Corporation	Educational Communications Corporation
Energy Resources Conservation Board	Energy and Natural Resources	Energy and Natural Resources	Energy and Natural Resources	Energy and Natural Resources
Environment	Environment	Environment	Environment	Environment

Alberta Departments Included in the Provincial Government Science Survey - continued

1979-80	1980-81	1981-82	1982-83	1983-1984
Advanced Education & Manpower	Advanced Education & Manpower	Advanced Education & Manpower	Advanced Education & Manpower	Advanced Education
Agriculture	Agriculture	Agriculture	Agriculture	Agriculture
Agricultural Research Trust	Agricultural Research Trust	Agricultural Research Trust	Agricultural Research Trust	Agriculture Research Trust
Alcoholism & Drug Abuse Commission	Alcoholism & Drug Abuse Commission	Alcoholism & Drug Abuse Commission	Alcoholism & Drug Abuse Commission	Alcoholism & Drug Abuse Commission
Attorney General	Attorney General	Attorney General	Attorney General	Attorney General
Consumer & Corporate Affairs	Consumer & Corporate Affairs	Consumer & Corporate Affairs	Consumer & Corporate Affairs	Consumer & Corporate Affairs
Culture	Culture	Culture	Culture	Culture
Economic Development	Economic Development	Economic Development	Economic Development	Economic Development
Education	Education	Education	Education	Education
Education Communications Corporation	Education Communications Corporation	Education Communications Corporation	Education Communications Corporation	Education Communications Corporation
Energy and Natural Resources	Energy and Natural Resources	Energy and Natural Resources	Energy and Natural Resources	Energy and Natural Resources
Environment	Environment	Environment	Environment	Environment
	Environment Centre	Environment Centre	Environment Centre	Environment Centre

Alberta Departments included in the Provincial Government Science Survey - continued

1974-75	1975-76	1976-77	1977-78	1978-79
Environment Conservation Authority	Environment Conservation Authority	Environment Conservation Authority	Environment Council (e)	Environment Council
Health Care Insurance Commission	Health Care Insurance Commission	Health Care Insurance Commission	Hospitals & Medical Care	Hospitals & Medical Care
Hospital Services Commission	Hospital Services Commission	Hospital Services Commission		
Housing Corporation	Housing Corporation			
Housing & Public Works	Housing & Public Works	Housing & Public Works	Housing & Public Works	Housing and Public Works
Lands & Forests (e)	Labour (5 month report)	Labour	Labour	Labour
Manpower & Labour				
Mines & Minerals				Mental Health Research Fund
Municipal Affairs	Municipal Affairs	Municipal Affairs	Municipal Affairs	Municipal Affairs
Northern Development				
Office of Program Co-ordinator				
	Recreation, Parks & Wildlife	Oil Sands Tech- nology & Research Authority	Oil Sands Tech- nology & Research Authority	Oil Sands Tech- nology & Research Authority
		Recreation, Parks & Wildlife	Recreation, Parks & Wildlife	Recreation & Parks (unavailable)

Alberta Departments included in the Provincial Government Science Survey - continued

1979-80	1980-81	1981-82	1982-83	1983-84
Environment Council Executive Council	Environment Council Executive Council	Environment Council Executive Council	Environment Council Executive Council	Environment Council Executive Council
Hospitals & Medical Care	Hospitals & Medical Care	Hospitals & Medical Care	Hospitals & Medical Care	Hospitals & Medical Care
Housing and Public Works Labour	Housing and Public Works Labour	Housing and Public Works Labour	Housing Labour	Housing Labour
Mental Health Research Fund	Mental Health Research Fund	Mental Health Research Fund	Mental Health Research Fund	Mental Health Research Fund
Municipal Affairs	Municipal Affairs	Municipal Affairs	Municipal Affairs	Municipal Affairs
Oil Sands Tech- nology & Research Authority Recreation & Parks	Oil Sands Tech- nology & Research Authority Recreation & Parks	Oil Sands Tech- nology & Research Authority Recreation & Parks	Oil Sands Tech- nology & Research Authority Recreation & Parks	Oil Sands Tech- nology & Research Authority Recreation & Parks

Alberta Departments Included in the Provincial Government Science Survey - concluded

1974-75	1975-76	1976-77	1977-78	1978-79
Social Services & Community Health	Social Services & Community Health	Social Services & Community Health (e)	Social Services & Community Health	Social Services & Community Health
Solicitor General	Solicitor General	Solicitor General	Solicitor General	Solicitor General
Task Force on Urbanization & the Future				
Transportation	Transportation	Transportation	Transportation	Tourism & Small Business
Treasury	Treasury	Treasury	Treasury	Treasury
Utilities & Telephones				
Workers' Compensation Board	Workers' Compensation Board	Workers' Compensation Board	Nil	Workers' Compensation Board
				Workers' Health, Safety & Compensation

Alberta Departments included in the Provincial Government Science Survey - concluded

1979-80	1980-81	1981-82	1982-83	1983-84
Social Service & Community Health	Social Services & Community Health	Social Services & Community Health	Social Services & Community Health	Social Services & Community Health
Solicitor General	Solicitor General	Solicitor General	Solicitor General	Solicitor General
Tourism & Small Business	Tourism & Small Business	Tourism & Small Business	Tourism & Small Business	Tourism & Small Business
Transportation	Transportation	Transportation	Transportation	Transportation
Treasury	Treasury	Treasury	Treasury	Treasury
Workers' Health, Safety & Compensation	Workers' Health, Safety & Compensation	Workers' Health, Safety & Compensation	Workers' Health, Safety & Compensation	Workers' Health, Safety & Compensation

RESPONDENTS
1983-84

Advanced Education - Co-ordinator: Asefa Gabregiorgis (427-4845)

Studies are carried out by the Planning Secretariat to assist the development of long range plans and policies in the area of advanced education. The other major activity is the operation of the Innovative Projects grant program to support the development and demonstration of innovative instructional techniques. R&D grants are awarded to researchers in the Alberta University and Health Organization through the Alberta Foundation for Nursing Research. In 1983-84, Advanced Education and Manpower was re-organized into two separate departments.

Agriculture Research Trust - Co-ordinator: Laraine Strafford (432-4931)

The Trust, funded by the provincial government and by industry, supports R&D projects in any aspect of agricultural and food sciences (including rural economy). Projects are carried out mainly in the Alberta universities.

Agriculture - Co-ordinator: Dr. J.P. Mahone (427-1957)

The Department operates a number of research centres in Alberta, as well as supporting agriculture related research projects undertaken by universities and provincial research organizations.

Alcoholism and Drug Abuse Commission - Co-ordinator: Art Dyer (427-4275) -

The Commission carries out or funds studies required for program evaluation and development.

Attorney General - Co-ordinator: Dennis Medwid (427-4997)

The Department makes an annual research grant to the Institute of Law Research and Reform of the University of Alberta.

Consumer and Corporate Affairs - Co-ordinator: John Dunfield (427-6941)

The Research and Planning Division conducts program evaluations, policy analysis and needs assessments in support of departmental progress.

RESPONDENTS - Continued

Culture

The social sciences were reported as a composite of Historic Site Service, Archaeology Survey, Provincial Archives, Tyrell Museum of Palaeontology, Reynolds-Alberta Museum Project, Historical Resources Division and Library (Mark Rasmussen, 427-3182). The natural sciences were reported by the Natural History Sector of the Provincial Museum (Dr. Philip Stepney, 427-1731) and Natural Resources Science Centre (John Brent Musgrave, 427-9490).

Economic Development - Co-ordinator: Terry Eliuk (427-3749)

Six branches are involved in related scientific activities: Finance and Administration, Industry Development, Trade Development, Manufacturing Industries, Strategic Planning and Transportation Services. The activities undertaken and funded were surveys and special studies to provide information for economic planning and policy formation.

Education - Co-ordinator: Dr. H.I. Hastings (427-2991)

Two branches of the Department are covered: Planning Services Branch and Student Records and Computer Services Branch. The program involves chiefly issue-oriented research of a cross-sectional nature as well as studies and surveys.

ACCESS Educational Communications Corporation - Co-ordinator: Dr. M. Plumb (451-3160)

The Research and Evaluation Branch carries out or funds related scientific activities.

Energy and Natural Resources

The Scientific and Engineering Services Division (Mr. R.D. McDonald, 427-8042) supports a large volume of R&D activity, funded mainly through the Alberta/Canada Energy Resources Research Fund. Projects relate to furthering the development and use of energy resources with emphasis on coal, renewables and energy conservation.

The four other reporting areas, Alberta Forest Service (Mr. J. Soos, 962-8700), Public Lands Division (Mr. R.J. Miller, 427-0237), Fish and Wildlife Division (Mike Melnyk, 422-4771), and Resource Evaluation and Planning Division (Mr. B.B. Delaney, 427-7222), have research activities in the natural sciences.

RESPONDENTS - Continued

Environment - Co-ordinator: Martin Rehn (427-3943)

Most of the activity is in the Natural Sciences with eight divisions reporting. Research Management, Planning, Environmental Assessment, Technical Services, Earth Sciences, Reclamation Branch, Standards and Approvals, Pollution control. A small amount of activity in the social sciences is reported by the Planning and Environmental Assessment divisions.

Alberta Environmental Centre - Co-ordinator: Dr. R.S. Weaver (632-6761)

The Centre is an inter-disciplinary research and service agency which studies and solves environmental problems identified by departments and agencies of the Government of Alberta.

Environment Council of Alberta - Co-ordinator: Mr. A. Giacomazzi (427-5792)

The Research Division, works in support of environmental issues. The Administration Division offers support through library services and panels and prepares reports and recommendations as well as providing information for various public hearings and policy formulating projects.

Executive Council

Provides R&D grants and contributions to the Alberta Research Council for research in the areas of atmosphere, geology, fossil fuels, microbiology, chemistry and related engineering applications. Data are taken from the Estimates of Expenditures, 1984-85.

Hospitals and Medical Care - Co-ordinator: Dr. Y.M. Cheung (427-1420)

The Heritage Trust fund supports the cancer research performed extramurally by hospitals and health organizations and universities. The heart disease research funds are now part of the departmental budget.

In the social sciences, funding is from within the departmental budget and activities include health care programs, hospital planning and related studies.

RESPONDENTS - Continued

Housing - Co-ordinator: Linden Holmen (427-8150)

The Policy and Planning Division, composed of Policy and Program Development Branch, Market and Economic Analysis Branch and Planning and Research Branch, is involved in studies and analysis relating to the social aspects of land and housing. The Planning and Research Branch carries out and supports research in the natural sciences relating to the built environment of housing.

Labour - Co-ordinator: Janet E. Howell (427-8531)

Wages and benefits as well as other labour information is studied and analyzed and made available for policy making and planning as well as the development of safety standards.

Manpower - Co-ordinator: Ian Montgomerie (427-8501)

The prime responsibility of the Planning Secretariat is the development of long-term plans and the recommendation of policy alternatives in the area of manpower planning, training and demography.

Prior to 1983-84, the Department of Manpower was included with Advanced Education and Manpower.

Alberta Mental Health Research Fund - Co-ordinator: Dr. R.J. Dyck (427-2813)

The Fund awards grants and contributions to Universities and Hospitals and Health Organizations for health related research and development in both natural and social sciences.

Municipal Affairs - Co-ordinator: Boyd Oberhoffner (427-2225)

The Research and Development Branch is involved in urban and regional studies.

Alberta Oil Sands Technology and Research Authority - Co-ordinator: Mr. W.G. Kowaluk (427-7623)

Alberta Heritage Trust is the primary source of funds for AOSTRA which awards numerous contracts for research and development. The industrial sector receives the majority of the money with universities and the Alberta Research Council getting most of the remainder.

Recreation and Parks - Co-ordinator: Mike Boyd (422-1730)

Natural and social related scientific activities are reported by the Planning Secretariat with their major objective being social development in the area of culture, sport and recreation.

RESPONDENTS - Concluded

Social Services and Community Health - Co-ordinator: C.A. MacDonald (427-8192)

The projects mainly include systematic investigations in order to provide information for planning and policy formulation on social assistance and child welfare.

Solicitor General - Co-ordinator: David Sunthara (427-0366)

Computer and Research Services are developing information systems and conducting research in criminal justice.

Tourism and Small Business - Co-ordinator: John Peters (427-4837)

Projects are classified as related scientific activities and involve evaluations, studies and surveys on tourism, small business and development of Northern Alberta.

Transportation - Co-ordinator: Helen Tetteh-Wayoe (422-2750)

Most projects are reported as natural sciences with only Urban Transportation Branch reporting some related scientific activities in the social sciences. This is due to the technical and engineering aspects of the work relating to transportation.

Alberta Treasury - Co-ordinator: Mr. O. DeVries (427-3058)

The Alberta Bureau of Statistics collects, compiles, analyses abstracts and publishes statistical information relative to the commercial, industrial, financial, social, economic and general activities and conditions of the province.

Workers Health, Safety and Compensation - Co-ordinator: John McDermott (427-6971)

The Heritage Trust Fund and Workers Compensation Board Assessment Revenue support a large portion of the social science projects. Related Scientific Activities in the natural sciences for the purposes of health are funded from the departmental budget.

Indicators of Provincial Scientific Activities

1. Population and Income

Province	Population January 1984 (1)	Personal income per capita 1982 (2)	Provincial Gross Domestic Product per capita 1982 (3)
	(000)	(\$)	Rank
Newfoundland	579	8,580	10
Prince Edward Island	125	8,894	9
Nova Scotia	866	10,090	7
New Brunswick	710	9,229	8
Quebec	6,529	12,021	5
Ontario	8,887	13,842	2
Manitoba	1,052	11,987	6
Saskatchewan	1,000	12,372	4
Alberta	2,345	14,025	1
British Columbia	2,852	13,811	3
Canada (4)	25,016	12,839	
			14,775

- 1) Canadian Statistical Review, Statistics Canada, Catalogue No. 11-003E, March 1984.
- 2) National Income and Expenditure Accounts, 1968-1982, Statistics Canada, Catalogue No. 13-201.
- 3) Provincial Economic Accounts, Experimental Data, 1967-1982, Statistics Canada, Catalogue No. 13-213.
- 4) Includes the Yukon and Northwest Territories.

Indicators of Provincial Scientific Activities

2. Universities

Province	Graduate students per ten thousand population (15 years and over) 1982-83(1)	Sponsored research in universities per capita, 1982-83 (2)	Rank	Rank
Newfoundland	13	21	7	6
Prince Edward Island	-	4	10	10
Nova Scotia	26	22	4	5
New Brunswick	10	17	9	9
Quebec	28	24	2	4
Ontario	28	31	1	1
Manitoba	26	31	3	3
Saskatchewan	12	19	8	8
Alberta	22	31	5	2
British Columbia	20	20	6	7
Canada	25	26		

- (1) Full-time enrolment for graduate degrees, per ten thousand population (15 years and over) Universities Enrolment and Degrees, 1982-83, Statistics Canada, Catalogue No. 81-204, and "Postcensal Estimate of Population by Sex and Age for Canada and the Provinces" June 1982, Population Estimates Section, Demography Division, Statistics Canada.
- (2) Financial Statistics of Universities and Colleges, 1982-83, Canadian Association of University Bus Officers.

Indicators of Provincial Scientific Activities

3. Industry

Province	Value added by manufacturing activity per capita, 1981(1)		Current intramural industrial R&D expenditures per employee in primary and secondary industry, 1982(2)	
	(\$)	Rank	(\$)	Rank
Newfoundland	951	8	--	9
Prince Edward Island	606	10	--	10
Nova Scotia	1,521	6	77	7
New Brunswick	1,454	7	67	8
Quebec	3,114	2	666	2
Ontario	4,169	1	900	1
Manitoba	1,943	4	181	6
Saskatchewan	824	9	208	5
Alberta	1,709	5	633	3
British Columbia	2,328	3	311	4
Canada(3)	2,954		662	

- (1) Manufacturing Industries of Canada; National and Provincial Areas, 1981, Statistics Canada, Catalogue No. 31-203.
 (2) Results of 1982 Industrial R&D survey, Science and Technology Statistics Division, Statistics Canada and The Labour Force, April, 1984, Statistics Canada, Catalogue No. 71-001.
 (3) Includes the Yukon and Northwest Territories.

Indicators of Provincial Scientific Activities

4. Federal Government

Province	Expenditures on intramural natural science activities 1982-83(1)	Federal personnel 1982-83(1)	Contracts awarded by the Science Procurement Sector, Department of Supply and Services, 1983-84(2)
	(\$'000,000)	(Person-years)	No. (\$'000,000)
Atlantic Provinces	157		
Quebec	98(3)	2,432	818
Ontario	209(4)	1,546(3)	399
Ottawa-Hull	583	4,407(4)	1,533
Manitoba	96	10,727	...
Saskatchewan	32	1,637	119
Alberta	64	686	71
British Columbia	88	1,308	254
Canada(5)	1,328	1,673	842
		24,452	4,060
			256

(1) Federal Scientific Establishments, 1982-83, Science and Technology Statistics Division, Statistics Canada.

(2) Research and Development Bulletin, April 1984, Supply and Services.

(3) Excluding Hull.

(4) Excluding Ottawa.

(5) Includes the Yukon and Northwest Territories.

Indicators of Provincial Scientific Activities

5. Provincial Research Organizations

Province	Total expenditures on science and technology, 1983(1)	Rank
	(\$'000)	
Nova Scotia	5,380	8
New Brunswick	5,870	6
Quebec	19,366	2
Ontario	18,686	3
Manitoba	5,704	7
Saskatchewan	10,294	4
Alberta	37,373	1
British Columbia	7,905	5
Total	110,578	

(1) "The Provincial Research Organizations, 1983", Science Statistics, Vol. 8, No. 11, Statistics Canada, Catalogue No. 88-001.

6. Sectors Performing R&D, by Region, 1982(1)

Performing sector	Atlantic provinces	Quebec	Ontario	Alberta	Other Western provinces	Canada (2)
	(\$000,000)					
Federal government ...	118	107	588	59	169	1,042
Provincial government	2	23	48	23	17	113
Provincial research organizations	5	9	12	21	10	57
Total government	125	139	648	103	196	1,212
Industry	16	559	1,349	255	186	2,381
Universities	78	261	325	114	175	953
Private non-profit ...	-	14	26	2	3	45
All sectors	219	973	2,348	474	560	4,591

(1) "Gross Domestic Expenditures on R&D by Region, 1979-82", uncatalogued report. Science and Technology Statistics Division, Statistics Canada.

(2) Includes the Yukon and Northwest Territories.

NOTE: Totals may not add due to rounding.

7. Sectors Funding R&D, by Region of Performance, 1982(1)

Funding sector	Atlantic provinces	Quebec	Ontario	Alberta	Other Western provinces	Canada (2)
	(\$000,000)					
Federal government	153	252	873	115	261	1,655
Provincial government ..	6	78	116	76	39	333
Provincial research organizations	-	1	1	-	-	3
Total government	159	331	990	191	300	1,971
Industry	15	444	1,082	203	151	1,908
Universities	42	128	116	54	80	421
Private non-profit	2	23	44	5	12	86
Foreign	1	47	116	21	17	205
All sectors	219	973	2,348	474	560	4,591

(1) "Gross Domestic Expenditures on R&D by Region, 1979-82", uncatalogued report, Science and Technology Statistics Division, Statistics Canada.

(2) Includes the Yukon and Northwest Territories.

NOTE: Totals may not add due to rounding.

8. Gross Domestic Expenditures on Research and Development, in Alberta, 1982(1)
Natural Sciences and Engineering

Funding sector	Performing sector							
	Government							
	Federal	Provincial	PRO	Total	Industry	Universities	Private non-profits	All Sectors
	(\$000,000)							
Federal government	59	-	-	59	27	29	-	115
Provincial government ..	-	23	20	43	5	26	2	76
Provincial research organizations	-	-	-	-	-	-	-	-
Total government	59	23	20	102	32	55	2	191
Industry	-	-	1	1	202	-	-	203
Universities	-	-	-	-	-	54	-	54
Private non-profit	-	-	-	-	-	5	-	5
Foreign	-	-	-	-	21	-	-	21
All sectors	59	23	21	103	255	114	2	474

(1) "Gross Domestic Expenditures on R&D by Region, 1979-82", uncatalogued report, Science and Technology Statistics Division, April 1984.

NOTE: Totals may not add due to rounding.

Provincial Co-ordinators

Five provincial governments sponsored the Science and Technology Statistics Division in the collection of similar scientific activity data. Below is a list of co-ordinators for the various sponsoring departments/ministries.

Mr. D. Clarke
Co-ordinator - Science & Technology
Planning, Development Branch
Department of Commerce and Development
P.O. Box 6000
Fredericton, N.B.
E3B 5H1 Tel.: (506) 453-2489

Mr. Gordon Stokell
Policy Advisor
Provincial Secretariat for Resources
Development
Room 1605, Whitney Block
Quenn's Park
Toronto, Ontario
M7A 1A2 Tel.: (416) 965-6366

Mr. Dale W. Botting
Executive Director
Saskatchewan Science and Technology
Government Research, Science and Technology
I.C., Douglas Building
3475 Albert Street
Regina, Saskatchewan
S4S 6X6 Tel.: (306) 565-2944

Dr. Bastiaan Heemsbergen
Director
Planning Secretariat
Alberta Advanced Education
Devonian Building
11160 Jasper Avenue
Edmonton, Alberta
T5K 0L1 Tel.: (403) 427-4845

Mr. B. Stevenson
Director
Science and Technology Division
and Communications
3rd Floor, 756 Fort Street
Victoria, B.C.
V8V 1X4 Tel.: (604) 387-4561

Publications of the Science and Technology Statistics Division of Statistics Canada

In August 1983, Statistics Canada formed a Science and Technology Statistics Division with staff from both Statistics Canada and the Ministry of State for Science and Technology. The basic mission of the Division is to assure the availability of pertinent statistical information in support of the development of science and technology in Canada.

Activities of the Division are described in a semi-annual report distributed free of charge entitled **Activities of the Science and Technology Statistics Division**. This report is published in June and December each year (First issue June 1984).

Information is disseminated in a series of reports including monthly service bulletins, occasional background papers and annual reports which are described below.

Catalogue

88-001	Science Statistics
88-201	Science and Technology Indicators, 1984
88-202	Industrial Research and Development Statistics, 1982
88-203	Resources for Research and Development in Canada, 1982
88-204E	Federal Scientific Activities, 1984-85
88-502E	International Payments and Receipts for Technology
88-503E	Technology and Commodity Trade
88-505E	Industrial Productivity and Research and Development Indicators
88-506E	A Framework for Measuring Research and Development Expenditure in Canada
88-507E	An Indicator of Excellence in Canada Science Summary Report

Uncatalogued

- Federal Government Expenditures on Activities in the Natural Sciences 1963-64 to 1984-85
- Federal Government Expenditures on Activities in the Social Sciences and Humanities 1970-71 to 1984-85
- Federal Personnel Engaged in Scientific Activities 1976-77 to 1984-85
- Federal Science Expenditures and Personnel 1984-85
- Federal Scientific Establishments 1982-83 Gross Domestic Expenditures on R&D, by Region, 1979-82
- Calculation of R&D Expenditures in the Higher Education Sector, by Province, 1982



Appendix B - Questionnaires and Guide: Provincial Government Survey

**PROVINCIAL GOVERNMENT ACTIVITIES
IN THE
NATURAL SCIENCES**

**QUESTIONNAIRE AND GUIDE
FISCAL YEAR 1983-84**

Ministry/Department or Agency		Reporting Unit	
Coordinator	Mailing Address		Telephone No.
Enquiries to be directed to		Telephone No.	Date



INTRODUCTION

This questionnaire covers natural science activities funded by the provincial government. It includes expenditure and personnel data for research and development (R & D) and related scientific activities. All departments and agencies known to be conducting or funding activities in the natural sciences are included.

The classification used in this questionnaire will not necessarily correspond to existing accounting systems or organizational units. Accurate data, therefore, depend on the good will and intelligent judgement of the responding officers. Information is required which describes the characteristics and magnitude of the department's activities; it is not a matter of decimal precision of data.

The data collected provide useful information for the development and analysis of provincial science policy. These statistics are also included with data collected from other sectors to provide national aggregates published by Statistics Canada. Data are released only with the approval of the provincial government.

This questionnaire includes only scientific activities in the natural sciences and technology.

Natural sciences and technology include the following disciplines:

Life sciences	— medical and biological
Physical sciences	— chemistry, physics and astronomy
Environment sciences	— geology, oceanography and the study of the atmosphere
Engineering sciences	— architecture, civil engineering, etc.
Mathematical sciences	

If departmental scientific activities involve natural science disciplines, complete this questionnaire.

The social sciences and humanities include such disciplines as:

Anthropology	Law
Business administration and commerce	Library science
Communications	Philosophy
Criminology	Political science
Demography	Psychology
Economics	Religious studies
Geography	Social work
History	Sociology
Languages, literature and linguistics	Urban and regional studies

If departmental scientific activities involve these disciplines, complete the separate questionnaire on activities in the social sciences and humanities.

In many instances, particularly in health fields, it will be difficult to distinguish between the natural and the social sciences. In such instances, however, some allocation must be made. Respondents should consider the main orientation of the projects involved and the field of training of the personnel in determining this allocation. Any measure which reflects the actual situation is acceptable.

Scientific Activities

The activities which concern us are those scientific and technological (S & T) activities which involve the generation, dissemination and initial application of new scientific and technological knowledge. The central activity is research and experimental development (R & D). In addition, there are a number of activities closely related to R & D. Included in this survey are: education support, technical surveys, information services, special services and studies, and museum services.

Research and Experimental Development

Research and experimental development (R & D) is defined as creative work undertaken on a systematic basis to increase the stock of scientific and technical knowledge and to use this knowledge in new applications.

The central characteristic of R & D is an appreciable element of novelty and of uncertainty. New knowledge, products or processes are sought. The work is normally performed by, or under the supervision of, persons with post-graduate degrees in the natural sciences or engineering.

R & D is generally carried out by specialized R & D units. However, an R & D project may also involve the use of non-R & D facilities (e.g. testing grounds), the purchase or construction of specialized equipment and materials, and the assistance of other units. Costs of such items, attributable to the project, are to be considered R & D costs.

R & D units may also be engaged in non-R & D activities such as technical advisory services, testing, and construction of special equipment for other units. So far as it is practical, the effort devoted to such operations should be excluded from R & D.

On the other hand, R & D may be carried out by units normally engaged in other functions (e.g. a marine survey ship used for hydrological research, a geological survey team directed to work in a certain area in order to provide data for a geophysical research project). Such effort is part of an R & D project and, again so far as is practical, the costs should be assigned to R & D expenditures.

Examples:

1. The development of new methods of identifying tree species and checking their condition is R & D; the use of recently developed methods, such as remote sensing and infra-red photography, as part of normal forestry surveys, is not.
2. The operation of a new transportation system as a demonstration project is not R & D; however, the *creation* of the system as a *prototype* and the evaluation of its operations should be considered R & D.
3. Grants to provide equipment for an R & D laboratory are to be considered R & D; grants to provide the same equipment primarily for teaching or medical care should not be considered R & D.

Related Scientific Activities

Education support — grants to individuals or institutions intended to support the advanced education of students in technology and the natural sciences. Report grants intended primarily to support the research activities of individuals as R & D (either R & D grants or research fellowships).

Technical surveys — activities directed towards the exploration and systematic description of the earth and its natural resources.

The activities which make up technical surveys include the gathering, processing, collating and analyzing of data on natural phenomena except when part of a research project or a museum service. The preparation of maps and survey reports, their printing and cataloguing, are also included.

Typical technical surveys are regular geological, hydrographic, and topographic surveys; routine astronomic observations; establishment and maintenance of meteorological records; soil, plant, fisheries, and wildlife surveys; routine soil and water tests; and monitoring of radioactivity levels.

Information services — all work directed to recording, classifying, translating, and disseminating scientific and technological information. Included are the operations of scientific and technical libraries, the publication of scientific journals and bibliographies, and the organizing of scientific conferences. Grants for the publication of scholarly works are also included.

General purpose information services or information services directed primarily toward the general public are excluded, as are general departmental and public libraries. When individual budgets exist, the costs of libraries which belong to institutions otherwise entirely classified to another activity, such as R & D or Technical surveys, should be assigned to Information services. S & T advisory and consultancy services for industry and agriculture are part of Information services. The costs of printing and distributing reports from activities such as Technical surveys or R & D are attributable to those activities.

Special services and studies — work directed towards the establishment of national and provincial standards for materials, devices, products and processes; the calibration of secondary standards; non-routine quality testing; feasibility studies and demonstration projects.

Feasibility studies are technical investigations of proposed engineering projects to provide additional information required to reach decisions on implementation. Demonstration projects involve the operation of scaled-up versions of a facility or process, or prototypes, after the R & D is completed, to provide additional data on factors such as costs, operational characteristics, market demand and public acceptance. Projects called "demonstration projects" but which conform to the definition of R & D should be considered R & D. Once a facility or process is operated primarily to provide a service or to gain revenue, rather than as a demonstration, it should no longer be considered in Special services and studies. In all demonstration projects, only the *net* costs should be considered.

Museum services — comprise the collecting, cataloguing, and displaying of specimens of the natural world or of representations of natural phenomena. The scientific activities of natural history museums, zoological and botanical gardens, aquaria, planetaria, and nature reserves are included.

The activity represents a systematic attempt to preserve and display items from the natural world; in some ways it could be considered an extension of information services. Parks which are not primarily restricted reserves for certain fauna or flora are not included. In all cases the costs of providing entertainment and recreation to visitors should be excluded (e.g. restaurants, children's gardens and nurseries).

If practical, resources of such institutions devoted to other activities, such as R & D or Information services, should be excluded from Museum services and assigned to those activities.

When a museum covers not only natural history but also aspects of human cultural activities, the museum's resources should be prorated between the natural and the social sciences. However, museums of science and technology, which display man-made objects and also may illustrate the operation of scientific "laws", should be considered in Museum services in the social sciences and humanities.

A. UNITS OF DEPARTMENT WHICH CARRIED OUT SCIENTIFIC ACTIVITIES (p.vi)

List those units (section/division/branch/station/group) of the department which carry out scientific activities and check the appropriate activities. If most of the units of a larger organization are engaged in the same activity, only the larger unit need be identified.

The list should help you to ensure that all the activities of the department are considered and that smaller units are not overlooked. It will also assist the data users to better understand the nature of the various scientific activities performed and could serve as a starting point for users requiring more information on some aspect of the department's activities.

B. MAJOR PAYMENTS FOR SCIENTIFIC ACTIVITIES (p. vii)

Enter the name and city of each recipient of a major payment ($\geq \$25,000$) and enter the payment in the appropriate activity column. Both grants and contracts are included.

The information provided here will assist you to complete Question 1, the "key" question in the survey. It will also be used by Statistics Canada to ensure that major external performers of scientific activities are included in surveys of the other sectors.

Replies to this question will be treated as confidential by both Statistics Canada and the provincial government.

1. PERFORMERS OF SCIENTIFIC ACTIVITIES (p. 1)

Performers

Intramural — the reporting department. The scientific work is normally carried out by personnel assigned to the department and usually in facilities of the department. Also included are the administration of extramural programs, the costs of acquiring land, buildings and equipment to be used in scientific activities, and contracts to provide services required for scientific projects (e.g. rental of aircraft, computer services).

Industry — Canadian business and government enterprises. Include public utilities and government-owned firms as well as non-profit institutions and associations mainly serving industry and not controlled by another institution (e.g. Pulp and Paper Research Institute). Consultants providing scientific and engineering services are also included. Industrial research institutes affiliated with a university belong in the Universities sector.

Universities — Canadian universities and affiliated institutes owned, administered or staffed by them (e.g. Atlantic Industrial Research Institute of Nova Scotia Technical College). Teaching facilities in non-university hospitals are included.

Hospitals and health organizations — Canadian hospitals and health organizations which are not part of university medical schools.

Provincial research organizations — The Nova Scotia Research Council, the New Brunswick Research and Productivity Council, le Centre de recherche industrielle du Québec, the Ontario Research Foundation, the Manitoba Research Council, the Saskatchewan Research Council, the Alberta Research Council, and the Research Council of British Columbia.

Other — the federal government, other provincial government departments, municipal governments, individuals and institutions not identified with any other sector, and foreign performers.

Activities — the activities of R & D, education support, technical surveys, information services, special services and studies, and museum services have been defined above. These activities are further classified by type of expenditure.

Current expenditures — expenditures on items such as personnel, transportation and communications, information, professional and special services, rentals, purchased repair and upkeep, utilities, materials and supplies. Current expenditures for R & D are divided as follows:

In-house R & D — R & D performed by personnel of the reporting department. It may include R & D carried out on behalf of another department and covered by a transfer of funds, as well as services provided by other organizations (e.g. computing, transportation).

R & D contracts — payments to other organizations to carry out R & D intended to directly benefit the reporting department. The administration of R & D contracts is an intramural cost.

R & D grants and contributions — payments to other organizations (or individuals) for R & D intended basically to benefit the recipient of the grant. Contributions and loans should be considered as grants. The administration of R & D grants and contributions is an intramural cost.

Research fellowships — payments to individuals for advanced research training and experience. The aim of the program should be research training rather than education.

Capital expenditures — expenditures on the construction and acquisition of land, buildings, machinery, and equipment.

2. SOURCES OF FUNDS FOR SCIENTIFIC ACTIVITIES (p. 1)

This question identifies the sources of funds for the total expenditures on scientific activities reported in Question 1. It will help to ensure that work funded from outside the department is not overlooked.

From departmental budget — that portion of the total departmental budget which was spent on natural science activities.

From other departments — money transferred from another provincial department to this one for activities in the natural sciences. Include when applicable, provincial portions of any federal-provincial cost sharing programs and identify the program.

From the Federal government — all funds from the federal government used for natural science activities. The funds are referred to as payments, contributions, transfers, etc. Also include federal portions of any federal-provincial cost sharing programs and identify the program.

From trust funds — all funds from trust funds used for natural science activities.

From other sources — all funds for natural science activities from sources not specified above such as reserve funds, revenues from sales or fees.

3. DEPARTMENTAL PERSONNEL ENGAGED IN SCIENTIFIC ACTIVITIES (p. 2)

The categories used to classify personnel will generally correspond to those used by the provincial government. The definitions given below indicate the training and educational level generally required for such categories. In all cases, however, consider the job classification, not the person's qualifications, because there will be some employees who exceed the qualifications required by the job (e.g. a person with a degree in a technical or clerical position).

Scientific and professional — people in jobs that require at least one academic degree or nationally recognized professional qualification (e.g. chartered accountant — C.A.) as well as those with equivalent experience.

Technical — people in jobs that require specialized vocational or technical training beyond the secondary level (e.g. community colleges and technical institutes) as well as those with experience equivalent to this training.

Other — clerical, secretarial, administrative, operational and other support personnel.

Data are requested by activity and category of employment in person-years or full-time equivalent. Persons engaged only in a scientific activity are considered one person-year. Those working part-time only on scientific activities are considered as a fraction corresponding to their involvement. Include both permanent and non-permanent employees.

Care should be taken to ensure that the personnel data reported are consistent with the expenditure data. This is the most common reason for questioning the validity of a return. It is suggested that respondents check this by dividing the reported total person-years into the intramural personnel costs reported in Question 4 to determine if the cost per person is a reasonable figure.

4. DETAIL OF INTRAMURAL EXPENDITURES (p. 2)

These data are useful for intra-departmental comparisons, for construction of constant dollar expenditures series, and for editing the question on personnel.

Some work is considered intramural although it is actually performed outside the department. This is because the performer supplies a service or good, the provision of which it would not consider a scientific activity. Examples are computing services purchased from another government department or the private sector, materials and supplies for the department's scientific activities, rental of accommodation or transportation. All non-capital expenditures of this nature are to be considered "other costs", even if the personnel cost's portion of such purchases are known. "Personnel costs" are to be used only for the departmental personnel reported in the preceding question.

5. OBJECTIVES OF EXPENDITURES ON SCIENTIFIC ACTIVITIES (p. 3)

The objectives listed are not mutually exclusive, nor do they represent the total range of possible objectives. They are, however, intended to cover the major areas of current economic, political and technological interest. This list is common to both the social and natural sciences.

Report expenditures under the objective which is primary to that expenditure. Generally, the objective selected should be consistent with the stated objectives of the reporting department.

Advancement of science — activities for the development of general scientific knowledge (e.g. general R & D grants to universities or support of fields such as astronomy and archaeology).

Communications — activities in support of the development and regulation of communication services, including telecommunications.

Energy and fuels:

Fossil fuels — activities concerned with the exploration, extraction, refining, use and conservation of crude oils, natural gas and coal.

Hydro electric energy — activities directed towards the generation, use and conservation of hydro electric power.

Nuclear energy — activities directed towards the development and use of nuclear energy, including safety and wastes management.

Other (specify) any other activities not covered by those listed above e.g. solar energy, biomass energy etc.

Environmental issues — activities aimed at preserving or restoring environmental quality, including scientific work on pollution but excluding medical aspects. For example, R & D on diseases caused by pollution should be reported under the health objective.

Health — activities related to the maintenance and improvement of the physical well-being of the population.

Industrial and economic development:

Agriculture — activities which support the agricultural industry.

Fisheries — activities which support the fishing industry.

Forestry — activities which support the forestry industry.

Manufacturing — measures intended to achieve efficient and sustained growth in manufacturing industries, and the encouragement of the production of new goods and services.

Minerals — activities related to the location, extraction, processing, use and conservation of mineral resources (except fuels).

Other (specify) — any objectives not covered by those listed above.

Social development and related areas:

Culture, sport and recreation — activities related to the support and development of culture, physical fitness, sport and recreation. Include wilderness recreation and conservation of fauna and flora.

Education — education support, grants for education research, activities in support of education policy.

Human resources — activities directed towards the development and utilization of the labour force. Labour relations, personnel policy and training programs, demographic and immigration studies are included.

Urban and regional studies — studies directed towards understanding communities and improving life within the urban and rural community.

Other (specify) — other activities directed towards social well-being (e.g. administration of justice, consumer protection).

Transportation — activities in support of the development and regulation of transportation services.

Other (specify) — any objectives not covered by those listed above.

Province

Ministry/Department

A. UNITS OF DEPARTMENT WHICH CARRIED OUT SCIENTIFIC ACTIVITIES, 1983-84 (Instructions — Page ii)

Unit	R & D	Education support	Technical surveys	Information services	Special services and studies	Museum services
			(✓)			

DESCRIPTION OF INTRAMURAL ACTIVITIES

Briefly describe the intramural scientific activities of the reporting department. Describe major current projects rather than overall programs. Attach any relevant material (papers, annual reports, etc.) which provide descriptions of departmental activities.

Province _____

Ministry/Department _____

1. PERFORMERS OF SCIENTIFIC ACTIVITIES, 1983-84 (Instructions — Page iii)

Scientific activity	1. Intramural activities	Payments to:					7. Total 1983-84
		2. Industry	3. Universities	4. Hospitals & health organizations	5. Provincial research organizations	6. Other	
Research and experimental development (R & D):							
Current expenditures:							
1. In-house R & D							
2. R & D contracts							
3. R & D grants and contributions							
4. Research fellowships							
5. Sub-total (1 + 2 + 3 + 4)							
6. Capital expenditures							
Related scientific activities (RSA):							
Current expenditures:							
7. Education support							
8. Technical surveys							
9. Information services							
10. Special services and studies							
11. Museum services							
12. Capital expenditures							
13. TOTAL EXPENDITURES							

2. SOURCES OF FUNDS FOR SCIENTIFIC ACTIVITIES, 1983-84 (Instructions — Page iii)

	\$000
1. From departmental budget	
2. From other departments	
3. From federal government (specify source)	
4. From trust funds	
5. From other sources (reserve funds, revenues from sales or fees)	
6. TOTAL EXPENDITURES	

Province _____

Ministry/Department _____

3. DEPARTMENTAL PERSONNEL ENGAGED IN SCIENTIFIC ACTIVITIES, 1983-84 (Instructions — Page iv)

Type of personnel	1. R & D	2. Related scientific activities	3. Total 1983-84
	Person-years		
1. Scientific and professional			
2. Technical			
3. Other			
4. TOTAL PERSONNEL			

4. DETAIL OF INTRAMURAL EXPENDITURES, 1983-84 (Instructions — Page iv)

Current expenditures:	\$000
1. Total estimated personnel costs	
2. Other costs (e.g. computing services, materials and supplies, rentals)	
3. Sub-total, current expenditures	
Capital expenditures:	
4. Land and buildings	
5. Machinery and equipment	
6. Sub-total, capital expenditures	
7. TOTAL INTRAMURAL EXPENDITURES	

¹ Equal to Question 1: column 1, row 13

Province _____

Ministry/Department _____

5. OBJECTIVES OF EXPENDITURES ON SCIENTIFIC ACTIVITIES, 1983-84 (Instructions — Page iv)

Objective	Intramural		Extramural		TOTAL
	R & D	Related scientific activities	R & D	Related scientific activities	
	\$000				
1. Advancement of science					
2. Communications					
Energy and fuels:					
3. Fossil fuels					
4. Hydro electric energy					
5. Nuclear energy					
6. Other (specify)					
7. Environmental issues					
8. Health					
Industrial and economic development:					
9. Agriculture					
10. Fisheries					
11. Forestry					
12. Manufacturing					
13. Minerals					
14. Other (specify)					
Social development and related areas:					
16. Culture, sport and recreation					
17. Education					
18. Human resources					
19. Urban and regional studies					
20. Other (specify)					
21. Transportation					
22. Other (specify)					
23. TOTAL	1	2	3	4	

¹Equal to Question 1: column 1, rows 5 and 6²Equal to Question 1: column 1, rows 7, 8, 9, 10, 11 and 12³Equal to Question 1: columns 2, 3, 4, 5 and 6, row 5⁴Equal to Question 1: columns 2, 3, 4, 5 and 6, rows 7, 8, 9, 10 and 11

Province _____

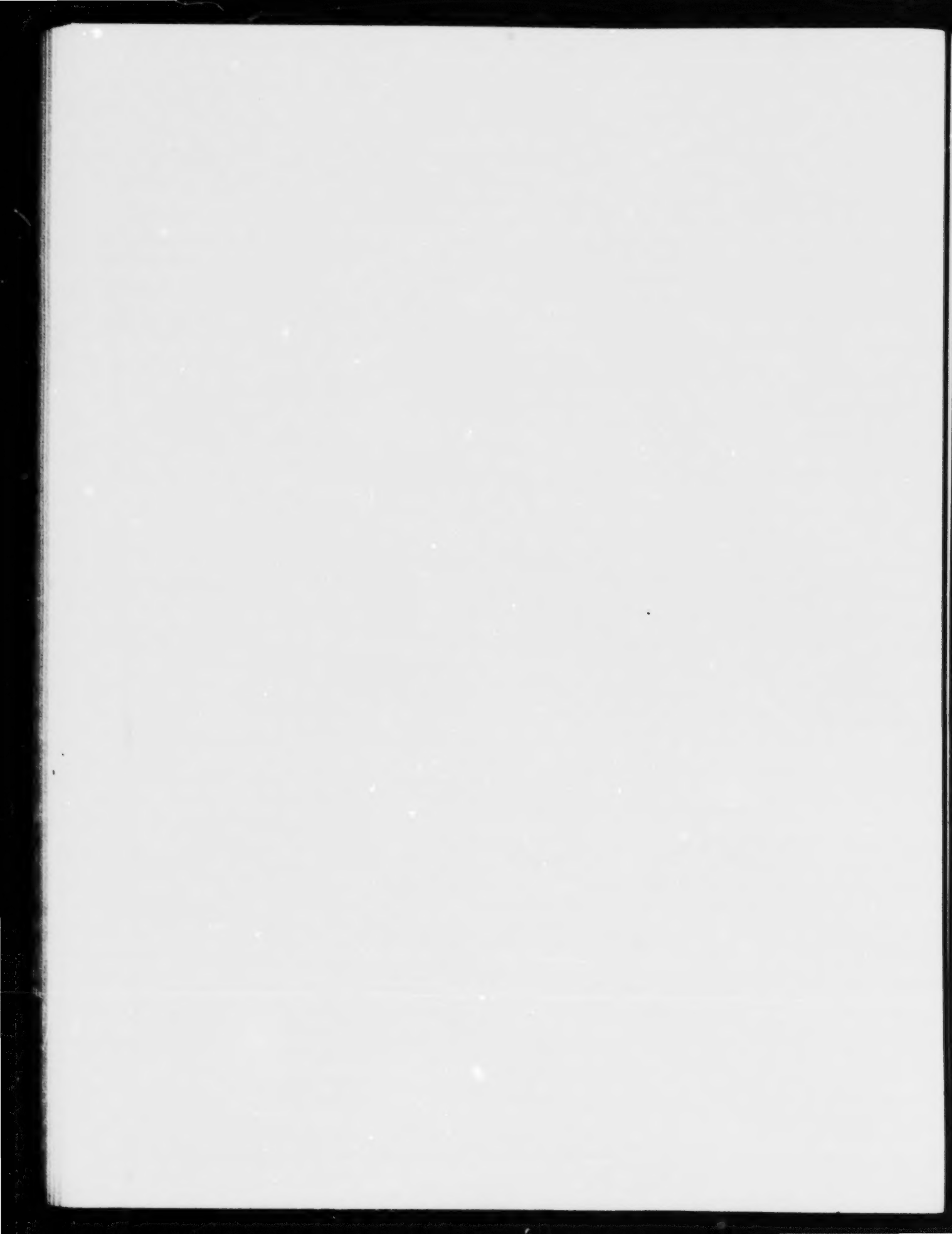
Ministry/Department _____

6. PERFORMERS OF SCIENTIFIC ACTIVITIES, 1984-85 (ESTIMATES)

Scientific activity	1. Intramural activities	Payments to:					7. Total 1984-85
		2. Industry	3. Universities	4. Hospitals & health organizations	5. Provincial research organization	6. Other	
Research and experimental development (R & D):							
Current expenditures:							
1. In-house R & D							
2. R & D contracts							
3. R & D grants and contributions							
4. Research fellowships							
5. Sub-total (1 + 2 + 3 + 4)							
6. Capital expenditures							
Related scientific activities (RSA):							
Current expenditures:							
7. Education support							
8. Technical surveys							
9. Information services							
10. Special services and studies							
11. Museum services							
12. Capital expenditures							
13. TOTAL EXPENDITURES							

7. DEPARTMENTAL PERSONNEL ENGAGED IN SCIENTIFIC ACTIVITIES, 1984-85 (ESTIMATES)

Type of personnel	1. R & D	2. Related scientific activities	3. Total 1984-85
	Person-years		
1. Scientific and professional			
2. Technical			
3. Other			
4. TOTAL PERSONNEL			



**PROVINCIAL GOVERNMENT ACTIVITIES
IN THE
SOCIAL SCIENCES AND HUMANITIES**

**QUESTIONNAIRE AND GUIDE
FISCAL YEAR 1983-84**

Ministry/Department or Agency		Reporting Unit	
Coordinator	Mailing Address		Telephone No.
Enquiries to be directed to		Telephone No.	Date



INTRODUCTION

This questionnaire covers activities in the social sciences and humanities funded by the provincial government. It includes expenditure and personnel data for research and development (R & D) and related scientific activities. All departments and agencies known to be conducting or funding activities in the social sciences are included.

The classifications used in this questionnaire will not necessarily correspond to existing accounting systems or organizational units. Accurate data, therefore, depend on the good will and intelligent judgement of the responding officers. Information is required which describes the characteristics and magnitude of the department's scientific activities; it is not a matter of decimal precision of data.

The data collected provide useful information for the development and analysis of provincial science policy. These statistics are also included with data collected from other sectors to provide national aggregates published by Statistics Canada. Data are released only with the approval of the provincial government.

This questionnaire includes only scientific activities in the social sciences and humanities.

The social sciences and humanities include such disciplines as:

Anthropology
Business administration and Commerce
Communications
Criminology
Demography
Economics
Geography
History
Languages, literature and linguistics

Law
Library science
Philosophy
Political science
Psychology
Religious studies
Social work
Sociology
Urban and regional studies

If departmental scientific activities involve these disciplines, complete this questionnaire.

Natural sciences and technology include the following disciplines:

Life sciences
Physical sciences
Environmental sciences
Engineering sciences
Mathematical sciences

— medical and biological
— chemistry, physics and astronomy
— geology, oceanography and the study of the atmosphere
— architecture, civil engineering, etc.

If departmental scientific activities involve these disciplines, complete the separate questionnaire on the natural sciences and technology.

In many instances, particularly in health fields, it will be difficult to distinguish between the social and natural sciences. In such instances, however, some allocation must be made. Respondents should consider the main orientation of the projects involved and the field of training of the personnel in determining this allocation. Any measure which reflects the actual situation is acceptable.

Scientific Activities

The activities which concern us are those scientific and technological (S & T) activities which involve the generation, dissemination and initial application of new scientific and technological knowledge. The central activity is research and experimental development (R & D). In addition, there are a number of activities closely related to R & D. Included in this survey are: education support, statistical surveys, information services, special services and studies, and museum services.

Research and Experimental Development

Research and experimental development (R & D) is defined as creative work undertaken on a systematic basis towards the acquisition of new knowledge about man, his actions and his institutions, and the application of this knowledge in new ways.

Both "research" and "development" are often used with different meanings in the government. For example, it is increasingly common to hear that someone is researching something, i.e., the person is looking for information about something.

Similarly, there are many units with either research or development or both terms in their titles which are concerned primarily with information gathering, speech writing, preparation of position papers or departmental organization.

R & D requires the acquisition of knowledge and not just information. New knowledge involves the integration of newly acquired information into existing hypotheses, the formulation and testing of new hypotheses or the reevaluation of existing observations.

An R & D project generally has three characteristics:

- a substantial element of uncertainty, novelty and innovation;
- a well-defined project design;
- a report on the procedures and results of the project.

"Many social scientists perform work in which they bring the established methodologies and facts of the social sciences to bear upon a particular problem, but which cannot be classified as research. The following are examples of work which might come in this category and are *not* R & D: interpretative commentary on the probable economic effects of a change in the tax structure, using existing economic data; forecasting future changes in the pattern of the demand for social services within a given area arising from an altered demographic structure; operations research as a contribution to decision-making, e.g. planning the optimal distribution system for a factory; the use of standard techniques in applied psychology to select and classify industrial and military personnel, students, etc., and to test children with reading or other disabilities."

(Frascati Manual)

Related Scientific Activities

Education support — consists of grants to individuals or institutions intended to support the advanced education of students in the social sciences and humanities. Report grants intended to support the research activities of individuals as R & D (either R & D grants or research fellowships).

Statistical surveys — the collecting, processing and disseminating of statistics on man, his economic and social activities. Included are the development of technical methodology and statistical analysis.

The institutions involved are the statistical bureaux of provincial governments and the statistical sections of departments and agencies. If there are units whose principal activity is R & D, their costs and personnel should be assigned to R & D; specialized libraries with separate budgets should be assigned to Information services.

Information services — all work directed to recording, classifying, translating, and disseminating information resulting from R & D in the social sciences or required in support of such R & D. Included are the operations of specialized libraries and archives, the publication of scholarly journals and bibliographies, and the organizing of scientific conferences. Grants for the publication of scholarly works are also included.

General purpose information services or information services directed primarily toward the general public are excluded, as are general departmental and public libraries. When individual budgets exist, the costs of libraries which belong to institutions otherwise entirely classified to another activity, such as R & D or Statistical surveys, would be assigned to information services. The costs of printing and distributing reports from activities such as Statistical surveys or R & D are attributable to those activities.

Special services and studies — systematic investigations carried out in order to provide information needed for planning or policy formulation. Demonstration projects are also included.

The work is usually carried out by specialized units in some government departments, by consultants, by royal commissions, and by task forces. The activity is similar to R & D since it may require innovative analyses and a high degree of scientific ability. However, such studies are not intended to acquire new knowledge but to provide specific answers to specific problems (generally immediate, localized and perhaps temporary). The day-to-day operations of units concerned with departmental planning, organization or management are not normally included but special projects may be relevant.

Examples of special studies would be a study of the viability of a petrochemical complex in a certain region of Canada, the Royal Commission on Poverty, the MacKenzie Valley Pipeline Inquiry, the Science Council's special studies, and the Manitoba Guaranteed Income Experiment (net costs).

Museum services — the collecting, cataloguing, and displaying of specimens and representations relating to the history, social organization, and creations of man.

The activity represents a systematic attempt to preserve and display the works of man and to provide information on his works, history, and nature. The scientific activities of historical museums, archaeological displays, and art galleries are included. In all cases, the costs of providing entertainment and recreation to visitors should be excluded (e.g. restaurants, children's gardens, and nurseries).

If practical, resources of such institutions devoted to other activities, such as R & D or Information services, should be excluded from Museum services and assigned to those activities.

When a museum also covers aspects of natural history, the museum's operations should be divided between the social and natural sciences. However, museums of science and technology, war, etc., which display man-made objects and may also illustrate the operations of certain technologies, should be considered as Museum services in the social sciences and humanities.

A. UNITS OF DEPARTMENT WHICH CARRIED OUT SCIENTIFIC ACTIVITIES (p. v)

List those units (section/division/branch/station/group) of the department which carry out scientific activities and check the appropriate activities. If most of the units of a larger organization are engaged in the same activity, only the larger unit need be identified.

The list should help you to ensure that all the activities of the department are considered and that smaller units are not overlooked. It will also assist the data users to better understand the nature of the various scientific activities performed and could serve as a starting point for users requiring more information on some aspect of the department's activities.

B. MAJOR PAYMENTS FOR SCIENTIFIC ACTIVITIES (p. vi)

Enter the name and city of each recipient of a major payment ($\geq \$25,000$) and enter the payment in the appropriate activity column. Both grants and contracts are included.

The information provided here will assist you to complete Question 1, the "key" question in the survey. It will also be used by Statistics Canada to ensure that major external performers of scientific activities are included in surveys of the other sectors.

Replies to this question will be treated as confidential by both Statistics Canada and the provincial government.

1. PERFORMERS OF SCIENTIFIC ACTIVITIES (p. 1)

Performers

Instrumental — the reporting department. The scientific work is normally carried out by personnel assigned to the department and usually in facilities of the department. Also included are the administration of extramural programs, the costs of acquiring land, buildings and equipment to be used in scientific activities, and contracts to provide services required for scientific projects (e.g. rental of aircraft, computer services).

Industry — Canadian business and government enterprises. Include public utilities and government-owned firms as well as non-profit institutions and associations mainly serving industry and not controlled by another institution (e.g. Pulp & Paper Research Institute). Consultants providing scientific and engineering services are also included. Industrial research institutes affiliated with a university belong in the Universities sector.

Universities — Canadian universities and affiliated institutes owned, administered or staffed by them (e.g. Atlantic Industrial Research Institute of Nova Scotia Technical College). Teaching facilities in non-university hospitals are included.

Hospitals and health organizations — Canadian hospitals and health organizations which are not part of university medical schools.

Provincial research organizations — The Nova Scotia Research Council, the New Brunswick Research and Productivity Council, le Centre de recherche industrielle du Québec, the Ontario Research Foundation, the Manitoba Research Council, the Saskatchewan Research Council, the Alberta Research Council, and the Research Council of British Columbia.

Other — the federal government, other provincial government departments, municipal governments, individuals and institutions not identified with any other sector, and foreign performers.

Activities — The activities of R & D, education support, statistical surveys, information services, special services and studies, and museum services have been defined above. These activities are further classified by type of expenditure.

Current expenditure — expenditures on items such as personnel, transportation and communications, information, professional and special services, rentals, purchased repair and upkeep, utilities, materials and supplies. Current expenditures for R & D are divided as follows:

In-house R & D — R & D performed by personnel of the reporting department. It may include R & D carried out on behalf of another department and covered by a transfer of funds, as well as services provided by other organizations (e.g. computing, transportation).

R & D contracts — payments to other organizations to carry out R & D intended to directly benefit the reporting department. The administration of R & D contracts is an intramural cost.

R & D grants and contributions — payments to other organizations (or individuals) for R & D intended basically to benefit the recipient of the grant. Contributions and loans should be considered as grants. The administration of R & D grants and contributions is an intramural cost.

Research fellowships — payments to individuals for advanced research training and experience. The aim of the program should be research training rather than education.

Capital expenditures — expenditures on the construction and acquisition of land, buildings, machinery, and equipment.

2. SOURCES OF FUNDS FOR SCIENTIFIC ACTIVITIES (p. 1)

This question identifies the sources of funds for the total expenditures on scientific activities reported in Question 1. It will help to ensure that work funded from outside the department is not overlooked.

From departmental budget — that portion of the total departmental budget which was spent on social science activities.

From other departments — money transferred from another provincial department to this one for activities in the social sciences. Include when applicable, provincial portions of any federal-provincial cost sharing programs and identify the program.

From the Federal government — all funds from the federal government used for social science activities. The funds are referred to as payments, contributions, transfers, etc. Also include federal portions of any federal-provincial cost sharing programs and identify the program.

From trust funds — all funds from trust funds used for social science activities.

From other sources — all funds for social science activities from sources not specified above such as reserve funds, revenues from sales or fees.

3. DEPARTMENTAL PERSONNEL ENGAGED IN SCIENTIFIC ACTIVITIES (p. 2)

The categories used to classify personnel will generally correspond to those used by the provincial government. The definitions given below indicate the training and educational level generally required for such categories. In all cases, however, consider the job classification, not the person's qualifications, because there will be some employees who exceed the qualifications required by the job (e.g. a person with a degree in a technical or clerical position).

Scientific and professional — people in jobs that require at least one academic degree or nationally recognized professional qualification (e.g. chartered accountant — C.A.) as well as those with equivalent experience.

Technical — people in jobs that require specialized vocational or technical training beyond the secondary level (e.g. community colleges and technical institutes) as well as those with experience equivalent to this training.

Other — clerical, secretarial, administrative, operational and other support personnel.

Data are requested by activity and category of employment in person-years or full-time equivalent. Persons engaged only in a scientific activity are considered one person-year. Those working only part-time on scientific activities are considered as a fraction corresponding to their involvement. Include both permanent and non-permanent employees.

Care should be taken to ensure that the personnel data reported are consistent with the expenditure data. This is the most common reason

for questioning the validity of a return. It is suggested that respondents check this by dividing the reported total person-years into the intramural personnel costs reported in Question 4 to determine if the cost per person is a reasonable figure.

4. DETAIL OF INTRAMURAL EXPENDITURES (p. 2)

These data are useful for inter-departmental comparisons, for construction of constant dollar expenditures series, and for editing the question on personnel.

Some work is considered intramural although it is actually performed outside the department. This is because the performer supplies a service or good, the provision of which it would not consider a scientific activity. Examples are computing services purchased from another government department or the private sector, materials and supplies for the department's scientific activities, rental of accommodation or transportation. All non-capital expenditures of this nature are to be considered "other costs", even if the personnel costs portion of such purchases are known. "Personnel costs" are to be used only for the departmental personnel reported in the previous question.

5. OBJECTIVES OF EXPENDITURES ON SCIENTIFIC ACTIVITIES (p. 3)

The objectives listed are not mutually exclusive, nor do they represent the total range of possible objectives. They are, however, intended to cover the major areas of current economic, political and technological interest. This list is common to both the social and natural sciences.

Report expenditures under the objective which is primary to that expenditure. Generally, the objective selected should be consistent with the stated objectives of the reporting department.

Advancement of science — activities for the development of general scientific knowledge (e.g. general R & D grants to universities or support of fields such as astronomy and archaeology).

Communications — activities in support of the development and regulation of communication services, including telecommunications.

Energy and fuels:

Fossil fuels — activities concerned with the exploration, extraction, refining, use and conservation of crude oils, natural gas and coal.

Hydro electric energy — activities directed towards the generation, use and conservation of hydro electric power.

Nuclear energy — activities directed towards the development and use of nuclear energy, including safety and wastes management.

Other (specify) any other activities not covered by those listed above e.g. solar energy, biomass energy etc.

Environmental issues — activities aimed at preserving or restoring environmental quality, including scientific work on pollution but excluding medical aspects. For example, R & D on diseases caused by pollution should be reported under the health objective.

Health — activities related to the maintenance and improvement of the physical well-being of the population.

Industrial and economic development:

Agriculture — activities which support the agricultural industry.

Fisheries — activities which support the fishing industry.

Forestry — activities which support the forestry industry.

Manufacturing — measures intended to achieve efficient and sustained growth in manufacturing industries, and the encouragement of the production of new goods and services.

Minerals — activities related to the location, extraction, processing, use and conservation of mineral resources (except fuels).

Other (specify) — any objectives not covered by those listed above.

Social development and related areas:

Culture, sport and recreation — activities related to the support and development of culture, physical fitness, sport and recreation. Include wilderness recreation and conservation of fauna and flora.

Education — education support, grants for education research, activities in support of education policy.

Human resources — activities directed towards the development and utilization of the labour force. Labour relations, personnel policy and training programs, demographic and immigration studies are included.

Urban and regional studies — studies directed towards understanding communities and improving life within the urban and rural community.

Other (specify) other activities directed towards social well-being (e.g. administration of justice consumer protection).

Transportation — activities in support of the development and regulation of transportation services.

Other (specify) — any objectives not covered by those listed above.

Province _____

Ministry/Department _____

A. UNITS OF DEPARTMENT WHICH CARRIED OUT SCIENTIFIC ACTIVITIES, 1983-84 (Instructions — Page II)

Unit	Research and experimental development	Related scientific activities
		(✓)

DESCRIPTION OF INTRAMURAL ACTIVITIES

Briefly describe the intramural scientific activities of the reporting department. Describe major current projects rather than overall programs. Attach any relevant material (papers, annual reports, etc.) which provide description of departmental activities.

Province _____
Ministry/Department _____

B. MAJOR PAYMENTS FOR SCIENTIFIC ACTIVITIES, 1983-84 (Instructions — Page ii)

Recipient	Research and experimental development	Related scientific activities
	5000	

DESCRIPTION OF EXTRAMURAL ACTIVITIES

Briefly describe extramural projects, or programs, and identify the sectors in which they are conducted. If descriptive material or lists of projects are available they may be submitted in lieu of completing this question.

Province _____

Ministry/Department _____

1. PERFORMERS OF SCIENTIFIC ACTIVITIES, 1983-84 (Instructions — Page ii)

Scientific activity	1. Intramural activities	Payments to:					7. Total 1983-84
		2. Industry	3. Universities	4. Hospitals & health organizations	5. Provincial research organizations	6. Other	
Research and experimental development (R & D):							
Current expenditures:							
1. In-house R & D							
2. R & D contracts							
3. R & D grants and contributions ...							
4. Research fellowships							
5. Sub-total (1 + 2 + 3 + 4)							
6. Capital expenditures							
Related scientific activities (RSA):							
7. Current expenditures							
8. Capital expenditures							
9. TOTAL EXPENDITURES							

2. SOURCES OF FUNDS FOR SCIENTIFIC ACTIVITIES, 1983-84 (Instructions — Page iii)

	5000
1. From departmental budget	
2. From other departments	
3. From federal government (specify source)	
4. From trust funds	
5. From other sources (reserve funds, revenues from sales or fees)	
6. TOTAL EXPENDITURES	

Province _____

Ministry/Department _____

3. DEPARTMENTAL PERSONNEL ENGAGED IN SCIENTIFIC ACTIVITIES, 1983-84 (Instructions — Page iii)

Type of personnel	1. R & D	2. Related scientific activities	3. Total 1983-84
	Person-years		
1. Scientific and professional			
2. Technical			
3. Other			
4. TOTAL PERSONNEL			

4. DETAIL OF INTRAMURAL EXPENDITURES, 1983-84 (Instructions — Page iv)

	\$000
Current expenditures:	
1. Total estimated personnel costs	
2. Other costs (e.g. computing services, materials and supplies, rentals)	
3. Sub-total, current expenditures	
Capital expenditures:	
4. Land and buildings	
5. Machinery and equipment	
6. Sub-total, capital expenditures	
7. TOTAL INTRAMURAL EXPENDITURES	

* Equal to Question 1: column 1, row 9

Province _____

Ministry/Department _____

5. OBJECTIVES OF EXPENDITURES ON SCIENTIFIC ACTIVITIES, 1983-84 (Instructions — Page iv)

Objective	Intramural		Extramural		TOTAL
	R & D	Related scientific activities	R & D	Related scientific activities	
	0000				
1. Advancement of science					
2. Communications					
Energy and fuels:					
3. Fossil fuels					
4. Hydro electric energy					
5. Nuclear energy					
6. Other (specify)					
7. Environmental issues					
8. Health					
Industrial and economic development:					
9. Agriculture					
10. Fisheries					
11. Forestry					
12. Manufacturing					
13. Minerals					
14. Other (specify)					
Social development and related areas:					
16. Culture, sport and recreation					
17. Education					
18. Human resources					
19. Urban and regional studies					
20. Other (specify)					
21. Transportation					
22. Other (specify)					
23. TOTAL	1	2	3	4	

¹ Equal to Question 1: column 1, rows 5 and 6² Equal to Question 1: column 1, rows 7 and 8³ Equal to Question 1: columns 2, 3, 4, 5 and 6, row 5⁴ Equal to Question 1: columns 2, 3, 4, 5 and 6, row 7

Province _____

Ministry/Department _____

6. PERFORMERS OF SCIENTIFIC ACTIVITIES, 1984-85 (ESTIMATES)

Scientific activity	1. Intramural activities	Payments to:					7. Total 1984-85
		2. Industry	3. Universities	4. Hospitals & health organizations	5. Provincial research organizations	6. Other	
Research and experimental development (R & D):							
Current expenditures:							
1. In-house R & D							
2. R & D contracts							
3. R & D grants and contributions							
4. Research fellowships							
5. Sub-total (1 + 2 + 3 + 4)							
6. Capital expenditures							
Related scientific activities (RSA):							
7. Current expenditures							
8. Capital expenditures							
9. TOTAL EXPENDITURES							

7. DEPARTMENTAL PERSONNEL ENGAGED IN SCIENTIFIC ACTIVITIES, 1984-85 (ESTIMATES)

Type of personnel	1. R & D	2. Related scientific activities	3. Total 1984-85
	Person-years		
1. Scientific and professional			
2. Technical			
3. Other			
4. TOTAL PERSONNEL			

Appendix C - Methodology Used In Producing Estimates for the University Sector

1. Expenditure Estimates

Data on research expenditures in the public and private sectors used in this report were compiled through annual surveys. There is, however, no such survey of research expenditures by universities in Alberta. As a result, the procedure for estimating these figures developed by the Canadian Association of University Business Officers (CAUBO) has been adopted for this purpose. The methodology is documented in detail in the Report of the Study on the Costs of University Research, August, 1982.

Universities are typically engaged in two types of research activity:

Sponsored Research is research activity for which financial support is derived from sources external to the university. This includes funds transferred from trusts and endowments for research purposes, contracts, or grants in aid of research, but does not include research sponsored directly by the university.

Non-Sponsored Research is research activity which is initiated and funded solely from within the university.

The university contributes in various ways toward the support of both types of research. This is done through allocations made from its operating funds, derived primarily from governmental sources, tuition fees and donations. These allocations support not only all costs associated with non-sponsored research, but also such indirect costs associated with sponsored research as professional salaries and support services such as libraries, computers, administration, consumable supplies and physical plant.

Therefore, in terms used in this report, Alberta's universities, through their operating funds, support all costs associated with non-sponsored research, both direct and indirect, and the indirect costs of sponsored research. Other sectors (the Federal Government, industry and the Alberta Government, through

contracts and non-operating research grants) are the source of funds for all direct costs of sponsored research performed at Alberta's universities. The total dollar value of all research performed by Alberta's universities is, then, the sum of all the direct and indirect costs of both sponsored and non-sponsored research.

1.1 Derivation of Research Expenditures

Based on the CAUBO methodology, research expenditures are calculated from the total operating expenditures of each university. Total operating expenditures are all expenditures made by the university including those from the general operating fund, trust and endowment funds, and sponsored research allocations, but excluding those from the capital account.

These expenditures have been broken down by faculty with general costs of the university being distributed across each faculty according to its proportion of total faculty expenditure. Faculties are classified according to the Statistics Canada classification of education disciplines. These "discipline groups" are:

- 1) Education, including Physical Education
- 2) Humanities, Fine Arts and Social Sciences
- 3) Business, Administration and Law
- 4) Physical and Applied Sciences

Multipliers have been derived from the CAUBO study which express, for each discipline group, total research expenditures as a proportion of total operating expenditures. These proportions are reported in Table 1.

When these proportions are applied to values given for sponsored research, trusts and endowments and operating expenditures as reported in the annual financial statements for each university, the form of the relationship becomes:

$$TR = TE(M_1)$$

where:

TR = Total Research Expenditures.

TE = Total Operating Expenditures as reported, including sponsored research, and trusts and endowments.

M₁ = Proportion of TE attributable to research.

The formula is applied to each of the four discipline groups, and the figures are summed to obtain an estimate of total research expenditures by the institution.

2. Personnel Estimates

It is also necessary to estimate the amount of personnel time devoted to research and development. This calculation is based on Full-Time Equivalent data for both full-time and part-time academic staff in teaching faculties at Alberta's universities. It is assumed that the nature of the faculty determines to some extent the proportion of time available for research activity. For this reason the CAUBO methodology also forms the basis for estimates of person-years for research and development.

CAUBO recognizes faculty time can be apportioned to at least three activities: instruction, research, and community and professional service. CAUBO's "Empirical Faculty Activities Analysis" shows research time for all disciplines averages 26 percent. More recent discussion by CAUBO and others suggests that this multiplier may be unrealistically low. Until a better methodology can be devised, it is believed that the average of 36 percent for research time (as employed in previous reports), is a more suitable multiplier for estimating person-years devoted to research and development.

TABLE 1

Multipliers Used in the Derivation of University
Research Expenditures by Discipline Group

Discipline Group	Total Research Expenditures as a Percentage of Total Operating Expenditures (M ₁)
Education	17
Humanities and Social Sciences	33
Business Administration and Law	25
Physical and Applied Sciences	45
Total Combined	36

